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THE RECOGNITION OF GENERAL PARESIS WHILE IT IS STILL SUSCEPTIBLE TO TREATMENT

WITH REMARKS ON THE COURSE AND CLINICAL FEATURES OF THE DISEASE

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General paresis is a disease of the cerebrum and the central nervous system caused by the presence and growth of the *Spirochaeta pallida* in its lymph system. The destructive action of these organisms is expended largely on the parenchyma or ganglion cells of the cortex of the brain. Any part of the nervous system may, however, be subject to its ravages, but the symptoms of the disease are always finally and conspicuously cerebral.

It is a fatal disease. Once it is fully developed it is subject neither to amelioration nor to interruption. Early and vigorous treatment of syphilis before the organisms have made their onslaught on the parenchyma of the central nervous system has wrought a change in the clinical display of the disease. The hope is justifiable, with our enhanced capacity to deal with syphilis, based on a profounder knowledge of the principles or laws which govern the life history of the spirochetes and their susceptibility to destruction by arsenic, that finally we may be able, first, to prevent general paresis, and failing in this, to cure it. Its prevention is synonymous with the prevention and adequate treatment of syphilis; this phase of the subject I have already discussed.[1]

There is no encouragement from experience recent or remote to justify the hope that we shall be able to cure general paresis until such time when we shall recognize the disease much earlier than we do now. We must thwart the preparations that the spirochetes make in the nervous system soon after infection, and we must annihilate them in their early skirmishes.

I have studied the histories of 100 general paretics that have come under observation during the past six years, since the founding of the Neurological Institute, where the facilities for their proper observation and interpretation exist, to learn if there was anything in the clinical histories of these patients that would permit the physician who saw them early, either to suspect the disease or to diagnosticate it with sufficient positiveness to subject them to treatment, and to enable one to say how these early cases comport themselves.

That general paresis is a syphilitic disease of the brain is now universally admitted. The textbooks still mention important contributory causes and discuss other de facto causes than syphilis; but the textbook of the future must say that general paresis is always a syphilitic disease. Less than half the patients admit syphilis or give indications direct or collateral that it has occurred, but study of the cerebrospinal fluid and blood serum of these patients gives information that satisfies me that the disease has its origin in syphilis in every instance. (It should be said that the latest recorded expressions of some syphilographers is inimical to this statement.[2])

Some writers still teach that sexual and alcoholic excess are important contributory factors to the causation of general paresis. There is a widespread belief, especially among English psychiatrists and among the laity, that sexual aberrations and particularly fellatio may cause the disease. There is not the slightest support for this supposition in my experience, nor do my histories, now amounting to upward of 400, bear out the statement that excessive use of alcohol is even a contributory cause deserving of mention. Many patients in the early stages of general paresis give way to excessive indulgence in alcohol as an evidence of their mental disorder, but this has nothing to do with the causation of the disease. I am not contending that an exciting cause of the disease is not operative in many instances, or that in addition to the de facto cause there is no exciting cause. It has been convincingly shown that among the natives of Algeria, from 60 to 70 per cent. of whom are syphilitic, paresis is practically unknown,[3] and this despite the fact that there is ample proof that syphilis has existed in Algeria as long as it has existed at all, namely, since 1495. Writers on this subject, as a rule, content themselves with the statement that this elusive contributory or exciting cause is synonymous with the stress of higher civilization and advancing culture and efficiency. Others maintain that hereditary factors in the existence of paretics have not been given adequate weight in estimating the etiology of the disease. If those who contend for the first are willing to say that general paresis is contributed to by every infringement on the laws of nature, there can be no possible objection to subscribing to it. But to say that it is incidental to civilization and culture, even though civilization and culture entail divorce of the simple life, is absurd.

That the hereditary factors are very prominent in paretics, as contended lately by Julius and Arndt, is not corroborated by my own studies. The occurrence of the disease in more than one member of the family may be interpreted as an evidence of inadequate resis-

1. Collins, Joseph: Syphilis of the Brain: Its Occurrence, Symptoms and Prevention, THE JOURNAL A. M. A., July 10, 1915, p. 139.

2. Nonne, M.: Syphilis und Nervensystem, Berlin, 1912.
3. Rudin: Allg. Ztschr. f. Psychiat., 1910, No. 5.

tance, as lowered vital resistance; it may also be accidental, or dependent on a single source of infection: for instance, among my cases are two brothers who were in college simultaneously, and who developed the disease, one at 39 and the other at 43; although not susceptible of proof, it is probable that there was a common source of infection in the two cases. On the other hand, the father of these two patients committed suicide, and it was thought he was insane.

Unquestionably an unstable, nervous organization may be inherited, and an unstable, nervous organization is more easily put out of commission than a stable one; but there is nothing to show that hereditary influences make the brain more susceptible to the inroads of the *Spirochaeta pallida*.

In 100 consecutive cases, the most painstaking inquiry into the family history in cooperation with some intelligent member of the family failed to reveal the history of nervous and mental disorder in the patients' ancestors or collaterals, save in eight instances. Another interesting factor bearing on heredity is the incidence of general paresis in Jew and Gentile in this series. There are thirty-two of the former and sixty-eight of the latter. The attendance in the outpatient department of the Neurological Institute, where

TABLE 1.—STATISTICS

Number of patients		100
	Male	86
	Female	14
Age:		
	Youngest	25
	Oldest	58
Average age when disease began		42 years
Average duration of the disease when patient came under observation		15 months
Average time that intervened between the infection and the beginning of paresis		15 years
	Shortest	2 years
	Longest	30 years
Race:		
	Jew	32
	Gentile	68
Profession and occupation		Practically every one
History of syphilis		41
Indication that syphilis had existed		13
Syphilis denied		53
Positive Wassermann reaction of the blood serum		87
Positive Wassermann reaction of the cerebrospinal fluid		85
Positive Wassermann reaction in serum and cerebrospinal fluid of fifty-nine patients who denied syphilis		56
History of the contributing causes:		
	Alcohol	25
	Physical and mental hardship	4
	Trauma	15
History of sexual excess and debauchery		7
History of the psychopathic constitution		7

the majority of these 100 cases were first encountered, is about 60 per cent. Hebraic. Despite this, there were more than twice as many Christians as Jews afflicted with the disease. This may be interpreted in one or two ways. Either the Polish and Russian Jew has not yet encountered that element of "Kultur" which plus syphilis causes in some instances general paresis, or heredity and the psychopathic constitution has nothing to do with its origin. The latter is my conviction.

Some day it may be shown that general paresis is caused by a peculiar species or strain of *Spirochaeta pallida*.

The most astounding information came from a study of the cerebrospinal fluid of those who denied syphilis, of which there were fifty-nine (some of these were in a state of mental enfeeblement which, of course, made their statements wholly unreliable). Of these, there was found in the blood and cerebrospinal fluid convincing evidence of syphilis. The three patients of fifty-five who did not give such indications were a woman whose blood serum alone was tested, another whose husband had died of tabes, and a man who was interpreted when I first saw him as an example of manic-depressive insanity.

There are certain features of the facts set forth which call for comment. The proportion of women to men is somewhat larger than in most statistics. This is to be interpreted that women who live the life which men live have not only its enjoyments but also its penalties. It also shows that occupation or profession has no bearing on the etiology of the disease, and that it occurs with greatest frequency during the years of greatest mental and physical activity. The statistics regarding the admission of syphilis on the part of the patients are interesting when contrasted with information furnished by study of the blood serum and cerebrospinal fluid of these patients. Although only 40 per cent. admitted having had syphilis, the blood serum was found to be positive in eighty-seven, the cerebrospinal fluid positive in 85 per cent., and the colloidal gold test was positive in 97 per cent. of the cases. There were four women whose laboratory reactions were strongly positive, whose husbands admitted syphilis. The Wassermann reactions of the serum and the cerebrospinal fluid taken from the husbands were negative.

Twenty-five per cent. of the patients admitted that they used alcohol intemperately, or their relatives made such admission. That may or may not be an approximation of the percentage of individuals who use alcohol intemperately.

About 8 per cent. of the cases give a history of trauma, some injury to the head which may very well have an indirect determining relationship to the disease. Most writers on general paresis have been struck by the fact that history of injury to the head is not uncommon in patients with general paresis.

CASE 1.—For instance, a young vigorous Norwegian, aged 35, by occupation a ferry tender, who was brought to us March 10, 1911, because he could not speak distinctly and there was some change in his general disposition, had the following history: About six weeks before the development of these symptoms, while running to drop the fender of the ferry or an incoming boat, he tripped over a rope and struck his nose, he was not incapacitated, and he did not seek medical advice, but within a fortnight it was noted that his speech was peculiar, and he himself said, "I do not know what is the matter, but sometimes I cannot say the words." The laboratory examination showed a positive Wassermann reaction of the blood serum and the cerebrospinal fluid, an excess of globulin, and 49 lymphocytes per cubic millimeter.

CASE 2.—Another example is that of a fireman, aged 39, who lived a temperate, hard working life and denied syphilis. He was badly injured in the disastrous fire which destroyed the Equitable Building in January, 1912. He was carried out of the building, when the floors collapsed, in an unconscious state, and remained in the hospital a week. Whether he was more shocked than physically injured is difficult to determine. He was never well after that. In October of the same year, when I first saw him, his complaint was that he fatigued easily, especially the right arm and leg; he was very nervous, disturbed by noises at home, and very slow in all his movements and actions; he was subject to attacks of great difficulty in speaking, which lasted for half an hour or a day. In addition to the typical mental and physical features of general paresis, his serology was as follows: serum Wassermann +, cerebrospinal fluid +, globulin +, Fehling's +, cells 11. He deteriorated with profound rapidity, and died five weeks after coming to the hospital.

Table 2 aims to set forth the information that was furnished when the patient's family were asked: "What was first noticed to indicate that the patient was not well?" Very rarely was only one symptom or complaint stated. It is to be remarked that in thirty-five instances (upward of one third of all the cases) the early symptoms were those that are commonly spoken of as neurasthenia, namely, nervousness, pains in different parts of the body, especially in the arms and legs, and change of outlook toward the world. In a great number of instances there were in the same patients insomnia, fatigue without attribution, and mental irritability. In reality, therefore, it may truthfully be said that in half the cases of general paresis the patient's complaint at first is more or less indefinite, made up of symptoms considered subjective, and founded often in apprehension, which cause the family, and regrettably the physician, to treat the condition lightly.

It is astonishing how frequently loss of memory is mentioned as an initial symptom. When it is realized that such infirmity is rarely remarked by others until it has reached a considerable degree, it is apparent that it is a very constant and important symptom. Taken in conjunction with nervousness and alteration of personality or "change of disposition," it is the most important early feature of the disease.

TABLE 2.—INITIAL SYMPTOMS OF GENERAL PARESIS

Symptoms	Number
Insomnia	13
Fatigue	21
Irritability, alteration of disposition, querulousness	19
Loss of memory	40
Headache	14
Dysarthria	33
Eyes affected	10
Pain in arms and legs	13
Nervousness	22
Stupor, indifference, apathy	12
Garrulousness, expansiveness	5
Unsteadines of gait; inability to control hands	8
Gastric crisis	2
Attacks of unconsciousness (convulsion)	5
Loss of sense of taste; sour taste in mouth	2
Hypochondriacal complaints	11
Dementia ("loses his way," "forgot how to use tools," etc.)	7
Depression, crying spells, indifference	9
Loss of insight ("does not realize he is ill")	14
Maniacal excitement	1

Motor disorder is the next most constant early symptom. It displays itself usually in dysarthria, but not infrequently as ataxia of gait, and inability to use the hands dextrously. There were eight cases in which disorder of locomotion was the chief symptom when the patient was brought. We should include under motor disturbances those cases initiated with attacks of unconsciousness, which invariably mean convulsions. There were nine such.

In many instances, loss of insight, which is perhaps the most distinguishing feature of the disease, often exists from the very onset. "He does not realize or admit that he is sick" is a statement that we often hear. On the other hand, in the early course of the disease, a few realize keenly their predicament, and few situations are more painful to witness than that of the individual who appreciates the nature of his infirmity. I refer briefly to one such case:

CASE 3.—A young married man, aged 28, who had had syphilis when 18 and received no treatment at the time, came under observation Jan. 9, 1912. His history was as follows: In August, 1910, he had a series of small sores on the body and extremities, which continued off and on for three or four months. In the summer of 1911 he had headache and pain in the top of the nose, for which relief was sought in operation on the nose. In September, 1911, he was always tired, cross and irritable, complained of frequent headaches, depressions, pain in different parts of the body and insomnia, and would not go to business. In October his blood was found to show a positive Wassermann reaction; he was given mercury hypodermically, later large doses of potassium iodid, and later mercurial inunctions. Jan. 1, 1912, he became delirious, smashed furniture, turned on the gas, and tried to persuade his wife to commit suicide with him. He was given an opiate, and the next morning he seemed to have no recollection of what had transpired. He was very slow in all his actions; it took him two hours to dress; he talked interminably about trivial incidences; he was querulous and unreasonable, and gave way to extremes of temper and to violence. Although the loss of memory was very apparent, and he himself complained that he could not remember things, he knew, he said, that he was going crazy. He reiterated that he was doomed to become insane and die in a straightjacket as his father had done. He realized that he could not conduct his business, and that there was only one eventuation for the disease that had overtaken him. These periods of apprehensiveness would come on him in attacks.

After he had been in the hospital for two or three days, the detailed interviews showed an excellent memory, keen capacity for attention, normal effectivity, correct orientation, and indeed, save for a slight euphoria manifest in trifling overcommunicativeness, his condition was quite normal. The customary physical signs of general paresis were present, and the serologic examinations were quite characteristic. He died in February, 1914, the disease having run the typical course.

DIAGNOSIS AND COURSE OF THE DISEASE

General paresis is an easy disease to diagnosticate if the typical mental features are present, if the majority of the physical symptoms constituting the signature of the disease, as it were, exist, and if the examination of the blood serum and cerebrospinal fluid shows the condition which is pathognomonic of the disease. These conditions being present, there can be no doubt of the diagnosis.

Of this series, in only one instance was the diagnosis not made. The history of that case is of sufficient importance to be cited in brief:

CASE 4.—A bookkeeper aged 35, married, childless, was seen March 5, 1910. His wife related that ten days before, he began losing his appetite, and three days later when he awakened he did not seem to recognize things as he should, and answered only in monosyllables. The next day he got up, sat around for a while and did not eat his breakfast, but went to business. His employer, who accompanied him, said that he was very forgetful and uncommunicative, and when he was asked for information concerning the books would forget to give the answer. On an attempt to interview him, the only questions he would answer were one concerning his age, and the other if he had ever had syphilis, to which he replied very emphatically in the negative. He refused to remove his clothing or to allow it to be removed, or to cooperate in a physical examination. The only physical sign elicited was absence of the knee jerks. The pupils responded to light; there was no facial or manual tremor. The serologic examination was entirely negative. During the first week in the hospital he was silent, uncommunicative, answered only in monosyllables, and was apparently not interested in anything or in any one. He would eat when fed, but would never voluntarily take food or drink, and gave no heed to the functions of the bowels or bladder. At the end of a week he gradually came out of the apathetic state, and in two weeks was apparently quite himself again, desired to go home, expressed realization of his illness, was grateful for the care that had been taken of him, and thought that if he could get into the country and have a change, he would improve rapidly. He returned home, and the first evening spent there he seemed to be quite as usual. The next morning he lapsed into a stuporous condition again. Then began,

in alternation, days of stupor and days of mild excitement. About the middle of May this alternation disappeared and his speech became dysarthric. He displayed great forgetfulness, and childishness in neglect of his person. June 4, he was admitted to the Hudson River State Hospital, and his condition was then, Dr. Pilgrim stated, a typical one of the tabetic form of general paresis. He was later admitted to the Middletown State Homeopathic Hospital, where the same diagnosis was made. He died within four years from the beginning of the disease.

In five instances it was difficult to make the diagnosis until after prolonged observation and study, from that form of brain syphilis, parenchymatous or vascular, which is spoken of clinically as pseudoparesis. The study of these cases and conclusions constitute a sequence to this paper.

In brief, it may be said that the only safe rule to follow is to subject all patients in whom one hestitates to make the diagnosis to a laboratory examination of the blood and cerebrospinal fluid. It may be humiliating for us to admit that we cannot make the diagnosis from the early symptoms alone, but there are more painful humiliations than this, and one is to have a so-called neurasthenic patient diagnosticated later as a paretic. One would be deeply censured for not suspecting paresis in an individual who gave a history of epilepsy occurring for the first time after 25 to 30 (full maturity), and for neglecting to employ every aid for its detection. But it is far more urgent to subject the mature man or woman who is depressed, irritable, apprehensive, sleepless, nervous, and who complains of indefinite disagreeable sensations which put them out of tune with everything, to such tests than the epileptic.

In the siftings of neurasthenia will be found the early general paretics. I am not in a position to say whether the somatic signs of general paresis, which are present in practically every case of the disease, namely, the change in outline of the pupil, the loss of the pupils' reaction to light, tremor of the lips, tongue and hands; alteration of the tendon jerks (exaltation or abolition); and disturbed coordination underlying purposeful movements, are in existence before these initial symptoms. They were in existence in practically every one of the patients of this series, but it must be kept in mind that all of these patients had been under treatment before we examined them.

THE COURSE OF THE DISEASE

The course of the disease is a variable one; in a few instances it makes uniform progress, and the patient gets worse week by week. This variety makes up about 10 per cent. of the cases. Then there is about another 10 per cent. which make partial recovery, that is, recovery which permits the patients to return to their profession or occupation. There were nine such instances in this series: one physician, one police captain, one patrolman, one carpenter, one tailor, one stockbroker, one merchant and two housewives. They all died, save two, within five years after the disease began. It is often difficult to convince the families of these patients that the cessation of activity of the disease is not equivalent to recovery.

For instance, cases like the following are not uncommon:

Case 5.—A married woman, aged 41, who had borne four children and had had no miscarriages, and whose husband, a steady, sober printer, denied syphilis, had suffered from insomnia, which was of the most unyielding variety, for fifteen months. In addition she complained of pain in different parts of the body, nervousness, and tremulousness of the hands and lips, and it has been noted that she had difficulty in articulation, and that she became irritable, petulant, forgetful and emotional. The mental, physical and serologic examinations were typical of the disease. Her insomnia yielded to treatment and her general health showed great improvement under the utilization of various forms of tonic treatment. A year later her doctor writes: "She has improved constantly since she came home, so that she is mentally and physically normal. She is able to go visiting, shopping and to the theater and to attend to her household duties."

It is safe to prophesy that within a year the disease will overtake her.

It is quite unsafe to make any statement concerning the course of the disease from its conduct during a few months. A patient will be going on most favorably, when abruptly the whole picture changes.

Case 6.—Such, for instance, was the case of a telephone operator, an unmarried woman of 31, who had been able to attend to her work without causing comment or complaint up to two weeks before going to the hospital, where she was brought by her brother, who stated that she was so unsteady on her feet that it was unsafe for her to go into the street alone. Her handwriting had become illegible; her articulation was so indistinct that she could be understood only with difficulty, and her employers related that she had become so careless and unreliable in her work that they could no longer employ her. In addition to the physical signs of the disease her laboratory examination was: serum Wasserman +, cerebrospinal fluid +, globulin +, Fehling's +, cells 109.

This patient made remarkable improvement under vigorous antisyphilitic medication, so much so that she was paroled from the hospital to which she went after leaving the Neurological Institute, and remained fairly well for six months. Then she relapsed into the condition described above.

In many of these cases the inclination is to attribute the improvement in the condition of the patient to treatment. The most remarkable was the following:

Case 7.—W. M., man, aged 31, a stenographer, single, who had infection when 24, with cutaneous and mucous membrane manifestations, and had been treated with inunctions and potassium iodid for a year, when seen, April 1, 1912, complained of nervousness, tremor of the hands, inability to articulate distinctly, failing memory and low spirits and was talkative, unreasonable, and showed no insight. Serologic examination revealed: serum Wassermann +, cerebrospinal fluid +, globulin —, Fehling's +, cells 13. Physical signs: Argyll Robertson pupils, absent tendon jerks, tremor of tongue and fingers, and syllabic speech.

Between that date and Jan. 10, 1914, he was in the hospital many times and received twenty-seven injections of salvarsan. His condition improved gradually, and in October, 1913, he seemed to be almost normal; but he manifested no desire to go to work, and accepted with great equanimity support from his sisters. October 30, he complained of headache and a little difficulty in speech; that night he had a series of mild convulsions; in the morning he was completely comatose; there were slight rigidity of all four limbs, and retention of urine, and he was unable to swallow. He remained in this condition for three days. Immediately on coming out of this condition he asked the day of the week, and realized that it was election day. The next day he was able to go out and walk. After this he became very obstinate and mandatory, gradually developed euphoria and grandiose ideas, and displayed the typical expansive features of the disease.

He remained in the hospital till November 22; his garrulousness and unreasonableness had practically disappeared. He came to the hospital at intervals of two or three weeks until Jan. 10, 1914, since which time he has had no treatment. His serology then was: serum Wassermann +, cerebrospinal fluid + —, globulin —, Fehling's +, cells 6.

July 15, 1915, in reply to a letter asking him to call for examination, he wrote in a bold, steady hand: "Your letter

inquiring about my condition received. In answer I will say that I feel very well, and think there is not any need of my going down to see you. Thanking you for your kind attention, I remain, etc."

There is a large percentage of cases, namely, 20 per cent., in which truly remarkable progress is made. The disease being only fairly well marked or typically developed, the patients seem to be going along without very conspicuous change from day to day or from week to week, when suddenly they are seized with a series of convulsions, and all the symptoms of profound physical and mental disintegration. After a few days the patient will be up and about, and in about the same condition that he was before the attack, perhaps slightly more euphoric or deficient of insight or interest, or hypomaniacal, but distinctly further along the roadway of the disease.

About half of the cases make steady progress, the clinical picture changing little from week to week, but the end of each succeeding year finds the patient worse. He usually succumbs within five years from the onset of the disease.

TABES, TABOPARESIS AND PARESIS

It is often said, sometimes lightly perhaps, that tabes and general paresis are the same disease attacking different segments of the cerebral nervous system, the one of the cord, the other of the brain. They may be the same disease, inasmuch as they are both syphilitic diseases that are the result of a remote and proximate action of the *Spirochaeta pallida;* but they are totally unlike clinically, and quite different pathologically.

Psychiatrists, and to a lesser degree neurologists, are inclined to designate patients with paresis plus pain, incoordination and absent tendon jerks as examples of taboparesis. There is some justification for this, for there are cases in which the symptoms and signs of the two diseases coexist.

Much more rare than these cases of taboparesis are cases of tabes that eventuate in typical paresis; that is, patients who have been under treatment for years for ordinary tabes suddenly develop the typical manifestations of general paresis. So far as I can learn from inquiry, such cases are rare; yet I have seen four such cases within the past six years.

Brief notes of two of these are:

CASE 8.—A coachman, seen first, Dec. 14, 1909, whose complaint was pain in the legs, shooting in character, which had been in existence for three and one-half years, and which developed six weeks after a fall from a horse, had difficulty in urinating (duration about six months), constipation and impotence. The physical signs were: irregular, Argyll Robertson pupil, absent ankle jerks, absent right knee jerk, left diminished, slight ataxia of station, but not of gait, and irregular areas of hyperesthesia of the trunk and abdomen. He was under observation and treatment for two years. Then following the death of his son, he became irritable and unreasonable; finally, he got into a street altercation and was locked up and brought back to the hospital with a typical picture of paresis, which made profoundly rapid progress, and he died within four months from the time of the appearance of the mental symptoms. Shortly before his death he developed a left third nerve palsy.

CASE 9.—Another even more unusual case was that of a man aged 43 who had syphilis when 20, and received customary treatment. When 38 he developed tabes, the evolution of symptoms being: difficulty in pedal and manual coordination, diplopia (third nerve palsy of one eye, six months later of the other), paresthesia of the hands, and darting pain in chest and upper extremities. The objective symptoms were pathognomonic. Four years after the beginning of the disease he began to be depressed at times with and without cause, but this was not interpreted as indication of mental disorder. A year later he became rather abruptly expansive, hypomaniacal and euphoric, and quickly displayed the most typical picture of paresis.

THE OUTLOOK FOR THE PREVENTION OF PARESIS

Were the state to treat syphilis, it is likely that paresis might be prevented; until it does, the prevention depends on the physician acting as an individual. It is too much to expect that all physicians will have the determination to thwart it or to be unanimous in regarding it as the chief menace to health.

TABETIC OCULAR CRISES

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Ocular crises were first described by P. K. Pel[1] (1898), but have not been generally recognized, and only a few cases are recorded. Oppenheim,[2] even in the sixth edition of his textbook, states that ocular crises with attacks of severe pain in the eyes, secretion of tears, spasm of the orbicular muscles, and hyperesthesia of the eyes and parts about the eyes, are not to be accepted as tabetic until further experience has been obtained. It is desirable, therefore, that cases of this character should be made known. Oppenheim has observed hyperesthesia of the retina in tabes which interfered greatly with a testing of the light reflex, as the eyes filled with tears on every attempt to take the light reflex.

Pel's case was one of tabes with paroxysms affecting both eyes, of ocular phenomena consisting of irritation of sensory, secretory, motor and vasomotor nerves. The mental condition of his patient during the attacks was altered. The man was restless and irritable. The ocular attacks occurred with sudden severe burning and stabbing pain in both eyes, interrupted by short intermissions. Pronounced secretion of tears with photophobia soon followed the pain, and it was difficult for the man to see because of spasm of each orbicularis palpebrarum muscle. The attacks varied in their duration. Sight was not affected in the intervals. In one attack the conjunctiva of each eye was red and swollen, and the eyes and area about the eyes were hyperesthetic, so that examination of the eyes was impossible, and the man felt exhausted after the attack. The appearance of the eyes during an attack was like the condition produced by rubbing the eyes in the presence of a foreign body beneath the lids. There is no mention of visual phenomena, and the optic nerves were normal. The condition was one of irritation of the trigeminal nerves, and the ocular pain was regarded as ciliary neuralgia. There was persisting paresthesia in the distribution of the trigeminal nerves.

Pel stated that until the time of his report no case of crises of one of the upper cranial nerves had been observed, as crises had been seen only in organs rich in vagus and sympathetic fibers. As the trigeminal nerve contains secretory, sensory, motor and vasomotor fibers, crises of this nerve might be expected, and this nerve is often affected in tabes.

Pel refers to reported cases of tabes with irritation of secretory fibers of the trigeminal nerves, as secre-

1. Pel, P. K.: Berl. klin. Wchnschr., Jan. 10, 1898, p. 25.
2. Oppenheim, H.: Lehrbuch der Nervenkrankheiten, Ed. 6, 1913, p. 181.

tion of tears (crises lacrymales, dacryorrhée ataxique), violent sneezing (crises nasales) with paresthesia of the nose, and finally increased secretion of saliva (Patrolacci, Féré, Koenig, Klippel). Klippel observed disturbance of taste in tabes. Pel speaks of ophthalmia neuroparalytica and tabetic ulcer of the mouth, trophic disturbances of the trigeminus, occurring rarely in tabes.

Pel's case differed from the examples he quotes in that it presented a combination of symptoms with pain predominating and occurring in sudden attacks, and therefore like tabetic crises. The hyperesthesia of the eyes and parts about the eyes during and following the attacks was important, and the spasm of the lids was regarded merely as a reflex act.

The case of ocular crises in tabes reported by Haskovec[3] was not exactly like Pel's case. A man, aged 37, had frequent attacks of pain, secretion of tears, and left exophthalmos. The left exophthalmos after an attack of pain became so great that the eyeball almost came out of the orbit. The secretion of tears was intense. The description makes the location of the pain uncertain, but it appears to have been in the eyes. No visual phenomena are mentioned.

Knauer's[4] patient, a woman with tabes, frequently had pain in the forehead with tenderness to pressure over the upper division of both trigeminal nerves during the pain. She had also pain in the right eye and adjoining region, with swelling and redness of the conjunctiva, free secretion of tears, photophobia, and contraction of the pupils. Only the right eye was affected in the first attack, but in later attacks the left eye became affected, as shown by redness and swelling, hyperesthesia, photophobia, sensation of a foreign body in the eye, and lacrimation. The most striking peculiarity of this case was that in one attack the right eye was affected and in another attack the left eye. Taste and smell were lost during the attack when there was hyperesthesia of the mucous membranes of the nose and throat; there was disturbance, therefore, in nerve supplies other than that of the trigeminus, but here there was loss of function, and not increase of function in another nerve territory as in my case. Knauer explains the loss in his case as a result of the hyperesthesia of the mucous membranes.

REPORT OF CASE

A colored man, who has been under my observation many years at irregular periods and is now in the service of Dr. C. K. Mills, has ocular crises of tabes with phenomena of irritation of the visual fibers not previously observed in other cases. This man was presented before the Philadelphia Neurological Society in 1910 by Dr. F. X. Dercum[5] to demonstrate that closure of the eyes greatly increased his ataxia, although the man was blind.

The case is typically one of tabes in a colored person. He has difficult micturition, optic nerve atrophy, ataxic gait, Romberg's sign, shooting pain in the lower limbs, loss of tendon reflexes, etc.

The attacks of pain in the eyes and adjoining parts date from 1901, and occurred with tabetic pain elsewhere in the body. During the attacks of ocular pain, peculiar visual phenomena developed. He described them as flashes of light, twisting and assuming the shape of reptiles, birds, houses, men, various forms of animals, etc. He asserted that he saw these objects clearly.

At the present time he describes the visual phenomena as follows: The attacks of ocular crises occur at irregular periods, and sometimes he has repeated attacks in a day; but the visual phenomena never occur without pain in the eyeballs. The pain is intense, jerking, stinging and burning, and the eyeballs feel as though they would come out of the orbits. The pain may last half an hour or longer in the eyeballs, and is accompanied by a free secretion of tears. The pain may suddenly remit and suddenly begin again with great severity. In the ocular crises he may see a body of water, as a pond, which revolves and then bursts, and gives place to figures of live lobsters, crabs and fish, moving rapidly backward and forward, some being red and some brown. At times he sees beds of "magnificent" flowers of various colors, which would give him great delight if the pain in the eyes were not so intense. He sees also faces of human beings, but not of persons known by him, he also sees blue stars on a brown background.

This man has no mental symptoms, he is entirely rational, and realizes that these visual phenomena have no real existence. He is totally blind and cannot even recognize daylight.

COMMENT

This case resembles the three cases of tabetic ocular crises reported in the literature (Pel, Haskovec, Knauer) in the sudden onset of attacks of severe orbital pain, with free lacrimation, but differs in the occurrence of visual phenomena. The latter phenomena recall to mind the scintillating scotomas and visual disturbance of certain cases of migraine or epilepsy, but they cannot be considered as identical with these. There is no evidence of cortical irritation in the ocular crises of my case. The lacrimation and pain probably are the result of irritation of the trigeminal nerves, and there appears to be a simultaneous irritation of the optic fibers, resulting in visual phenomena. I have known visual hallucinations to be caused by hemorrhage into the retina, and have referred[6] to a number of cases in which these phenomena were produced by irritation of different portions of the visual system.

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3. Haskovec, L.: Rev. neurol., 1906, p. 391.
4. Knauer: München. med. Wchnschr., Sept. 15, 1908, p. 1926.
5. Dercum, F. X.: Jour. Nerv. and Ment. Dis., May, 1911, p. 281.
6. Spiller, W. G.: The Eye and Nervous System, edited by Posey and Spiller, p. 388.

THE HISTORY OF INTRAVENOUS AND SUBCUTANEOUS ADMINISTRATION OF DRUGS*

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With the revival of interest in the treatment by drugs, and the epoch-making studies of pharmacology and experimental therapeutics in the past ten or twenty years, the administration of substances by subcutaneous or intravenous injection is being practiced on a large scale, both in experimental work on animals and in the treatment of patients. An inquiry into the historical development of these more exact and certainly more efficacious methods of drug administration may therefore be of considerable and timely interest. Curiously enough, although in the domain of surgery we find the names of numerous individuals perpetuated by being tagged to all kinds of minor and unimportant manipulations and operations, in the domain of internal medicine and more especially in connection with medicinal treatment, the origin of some of our most important and life-saving procedures and remedies is shrouded in obscurity. It is really our duty, therefore, to ascertain as far as possible and commemorate the

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names of those who discovered or invented these procedures and remedies.

Although we at present are logically prone to class hypodermic and intravenous methods together, and owing to the more elaborate technic involved, to think of the hypodermic first and of the intravenous injection second, historically the two methods are very far apart, and the intravenous injection of drugs anteceded the hypodermic by several centuries. It will therefore be considered first.

INTRAVENOUS INJECTIONS

If we consider transfusion of blood under intravenous injections, that procedure goes back to the remote antiquity. The Egyptians are said to have practiced it. Certainly the earliest explicit record of it dates as far back as 1492, when it was recommended for the treatment of Pope Innocent VIII. If, however, we confine ourselves strictly to the subject of injection of drugs, the first experiment of that character was performed in England, and that not by a medical man at all. It was Christopher Wren, professor of astronomy at Oxford, who first tried the bold experiment of injecting drugs into the veins of animals.[1]

Sir Christopher Wren was born in 1632 and died in 1723. He was the son of a clergyman, and at a very young age gave evidence of an exceptionally clever mind. While a boy he became interested in natural science and mathematics, assisting, when only 14 years old, Sir Charles Scarborough, physician to King Charles II, in anatomical and other experiments. He went to Oxford, distinguishing himself as a mathematician, and took his degree in 1650. His mathematical proficiency was so great that even Newton spoke highly of his work. In 1657 he became professor of astronomy at Gresham College, and in 1660 was made Savilian Professor of Astronomy at Oxford. He played not a small part in the formation of the Royal Society. A versatile genius — mathematician, astronomer, and, as he is best known, one of the world's most famous architects — Sir Christopher found time to dabble in pathogenic experiments. In the year 1656 he injected dogs with opium and crocus metallorum. He selected big lean animals with prominent veins, and his injection apparatus consisted of a quill attached to a small bladder. The opium, we are told, stupefied the dogs but did not kill them, while the other drug caused violent vomiting.

The experiment was repeated with the same results at Pisa by Carolo Fracassato in 1658.

The first intravenous injection of a drug in man, according to Fortescue-Brickdale in his monograph on intravenous injections,[2] was also made by Christopher Wren in 1657. It appears that a certain foreign ambassador at the Court of St. James, being interested in Wren's experiments, offered a delinquent servant of his as a subject for the experiment. An injection of vinum emeticum was to be made, but the victim either really or craftily fell into a swoon, and the experiment had to be discontinued.

A little later, in 1662, J. D. Major, an English practitioner, successfully injected human beings intravenously, and describes that operation under the title of "chirurgia infusoria."[3]

Escholtz[3] published a book in 1665 in which he described intravenous injection, and mentions three patients treated by himself. One was a soldier with an ulcer of the foot, probably syphilitic, who was injected with aqua plantagenis in the crural vein; the other two were injected with aqua cochleariae for some obscure affections.

In 1666, Fabricius[4] described three cases treated by him in Danzig. The interesting point to note in this connection is that one of the patients was a soldier with syphilitic exostoses who was injected with scammonium. The other patients were epileptic women injected with resin of jalap.

Schmidt of Hamburg[5] in 1667 communicated to the Royal Society a report of five patients whom he treated by intravenous injections. Two of these were syphilitics, and were injected with jalap, which seems to have been a favorite remedy at the time.

Two works appearing at this early period give a good account of the condition of intravenous medication at that time. One is a dissertation by G. F. Stirius,[6] a pupil of Ettmüller, in 1668, in which he reviews the subject as a whole, adding an account of his own experiments. The work is in Latin. He mentions the substances used for injection, alcohol, water, opium, tartar emetic, etc., and holds that infusion is applicable to most cases, except in pregnant women. An interesting point to be noted in connection with his discussion of opium is that even at that early date the observation was made that opium acted on cats very differently from the way it affected dogs. The latter were narcotized while the former were put into a state of delirium.[7]

The other summary of the subject is a chapter on infusion or intravenous injections in Purmann's work on various surgical procedures,[8] published in English in 1683. He mentions a long list of substances which were injected in animals and man. The most popular ones seem to have been purgatives, emetics and narcotics:

> They made their first tryals on dogs, and only with spring water. They proceeded to purging and vomiting medicines, which being injected into the vena cruralis, they perceived it to have there different effects. Purging medicines being injected they purged, and vomited of the infusion of crocus metallorum. Opium made them sleep and too large a dose took away their lives.

He himself, by the way, was injected on two occasions with aqua cardui without any untoward results.

Altogether, however, the experiments at this first or early period in the history of intravenous injections were rather discouraging in their results, and for that reason the practice fell into disrepute and was not revived until the end of the eighteenth century.

The reason was that, like most novel procedures, infusion was applied indiscriminately in all kinds of cases.

The three interesting facts worthy of remembrance about this earliest period are, first, the discovery of intravenous injection by the versatile Sir Christopher Wren in 1656; second, that one of the first drugs injected was what is even now probably the most important drug we possess — opium, and third, that even as early as 1666, intravenous injections were

1. Bishop Spratt: History of the Royal Society of London, 1667, p. 317.
2. Fortescue-Brickdale: Guy's Hosp. Rep., 1904, lviii, 15.
3. Cited by Fortescue-Brickdale (Footnote 2).
4. Fabricius: Phil. Trans., ii, 569.
5. Schmidt: Phil. Trans., iii, 966.
6. Stirius, G. F.: Dissertatio medica de Chirurgia infusoria, Leipzig, 1668.
7. "So much opium as is (ordinarily) given to man will throw a cat into a fatal delirium, whereas it will cause no harm to a dog." (Opii tantum quantum hominem injecare felem vero in rabiem lethalem conjicere potest, nullam noxam cani propinatum infert.)
8. Purmann, Matthieu Godefroi: Chirurgia Curiosa, London, 1706.

practiced in the treatment of syphilis, a fact worthy of note in connection with our present salvarsan therapy.

The second period in the history of intravenous injection of drugs or infusion may be said to begin about the end of the eighteenth century and extend to the middle of the nineteenth century, and is characterized by more careful experimental work along toxicologic and pathologic lines. In this connection are to be noted the names of some very famous medical men, Fontana, Magendie, Bichat, Nysten, Orfila and others.

Freind,[3] whose works were published in 1773, experimented with injections of acids and alkalies on animals. He was also the first to demonstrate the danger of the entry of large quantities of air into a vein. Nysten,[9] Bichat, Diffenbach[10] and Magendie[11] did further work on air embolism, and Gaspard[12] demonstrated the impracticability of using oil injections.

Among the most important work in this period were the attempts to cure tetanus and hydrophobia by intravenous injections.

Baron Percy[13] in 1814 treated two series of cases of tetanus with injections of opium and stramonium, stating that in the first group three of five patients recovered, and in the second, five out of eight. Magendie in 1823 made various experiments on animals, healthy and rabid, injecting them with warm water and opium but with little success. He made the interesting observation that a rabid animal required more than the usual amount of a sedative to produce narcosis. Magendie also tried to treat cholera by injection of camphor in dilute alcohol.

Daniel,[14] in a dissertation in 1827, gave a full account of the experiments up to that date. Among the drugs which he tried to inject was mercuric chlorid, of which he found that one-quarter grain was fatal to a middle sized dog.

Among the boldest experiments of this period are those of the Boston physician, Dr. E. Hale, who succeeded in injecting himself with half an ounce of castor oil. The result was really remarkable, for he actually survived to relate the tale of his experience.

In 1869, Dr. G. B. Halford[15] reported before the Victoria Medical Society some observations, experimental and clinical, on the injection of ammonia in cases of snake bite. This work attracted a great deal of attention, but was soon contradicted by other observers and the practice was eventually abandoned.

Another important contribution to the subject was the injection by Oré[16] in 1874 of chloral instead of opium in tetanus and hydrophobia. He had some success at first, but very soon the practice was found dangerous and was also abandoned.

The next or third period in the history of intravenous injections is distinguished by the development of bacteriologic knowledge, and the injections of substances then undertaken had in view one of two objects, namely, either the increasing of the patient's resistance to infection, or the destruction of the deleterious agents of infection themselves. Under the first heading must be mentioned first the injections of balsam of Peru and later of sodium cinnamate in tuberculosis by Landerer[17] in 1892, and second, the injections of sodium cacodylate for pernicious anemia and other conditions by Gautier[18] about 1897. Under the second heading the most important contributions to note were the famous work of Baccelli[19] in 1890 on intravenous injections of quinin in malaria, and the work of Credé[20] in 1901 on the injection of silver salts in all kinds of infections. These investigations are too well known to be discussed in detail in this place. They paved the way to our present rational intravenous therapy, based on careful pathologic, pharmacologic and chemical research.

The number of drugs now used for intravenous injections is increasing daily. Some of these, such as the administration of salvarsan, strophanthin, quinin, etc., are of proved and established value; others are of doubtful usefulness, and many others are actually deleterious when injected into the veins, and their administration through that channel is to be discouraged. However useful intravenous medication may be in special cases, its field of application is certainly more limited than that of hypodermic injection, which will now be considered.

HYPODERMIC INJECTIONS

A hypodermic or subcutaneous injection, like so many other important manipulations practiced by physicians daily, seems to us to be a very simple procedure; yet its discovery was really a great intellectual achievement, and it was not evolved until recently. The desirability of administering medicinal substances through channels other than the alimentary canal was appreciated long ago, and the skin as an absorbing organ was thought of also very early. We therefore find, preliminary to the introduction of our present subcutaneous method, the employment of the so-called *epidermatic* method, that is, the application of substances in the form of ointments, liniments, etc., directly to the skin. A modification of this form of treatment was the so-called *iatraleptic* or *anatripsological*, by which was meant a vigorous rubbing in of substances into the integument.

An advance toward the present mode of treatment was the so-called *endermic* method, by which was meant the application of medicaments directly to the cutis instead of the epidermis. This was done in several ways, the simplest being by loosening or removing the epidermis by means of blisters or caustics, and then applying the drug to the raw surface. Another method was by destroying a small area of epidermis by touching it with a hot hammer. A still different method employed in some cases was by soaking threads or setons in solutions of morphin or other substances and passing them by means of a needle through folds of the skin. The endermatic method, according to Eulenburg,[21] was introduced by Lembert and Lessier about 1823.

A still further advance toward modern hypodermic therapy was the practice of *inoculation*. This method was used extensively of course for vaccination with cowpox virus, but the French surgeon LaFargue[22] in

9. Nysten: Rocherches pour faire suite a celles de Bichat, Paris, 1811.
10. Diffenbach: Jour. compl. du dict. d. sc. méd., 1829, p. 371.
11. Magendie: Jour. compl. du dict. d. sc. méd., 1823, p. 312.
12. Gaspard: Jour. compl. du dict. d. sc. méd., 1823, p. 309.
13. Percy: Jour. compl. du dict. d. sc. méd., 1818, p. 26.
14. Daniel: De Medicamimum in venos injectione, Dissertation, Berlin, 1827.
15. Halford, G. B.: Australian Med. Jour., 1869, xiv, 333.
16. Oré: Compt. rend. Acad. d. sc., 1879, pp. 515, 651.
17. Landerer: Berl. klin. Wchnschr., 1890, xxvii, 280, 312.
18. Gautier: Bull. de l'Acad. de méd., July 3, 1901.
19. Baccelli: Tr. Tenth Internat. Med. Cong., Berlin, 1890.
20. Crede: Berl. klin. Wchnschr., 1901, xxxviii, 991.
21. Eulenburg, A.: Die hypodermatische Injection der Arzneimittel, Berlin, 1867.
22. LaFargue: Bull de therap., 1897, xxxiii, 19.

1836 proposed its use for the administration of other remedies. None of the methods mentioned, however, proved satisfactory.

The invention or discovery of injecting solutions of drugs under the skin is generally attributed to the Scotch physician, Alexander Wood of Edinburgh, in 1853. Recent investigations, however, and especially the valuable contribution on the subject by Dr. Charles A. Pfender[23] of Washington, D. C., prove conclusively that the first use of hypodermic injection in therapeutics was not made by Wood, but by an Irish surgeon, F. Rynd, in 1844, or about ten years earlier. I myself have carefully gone over the literature on the subject in the Surgeon-General's Library, and find that Pfender's conclusions are incontrovertible. Rynd published in 1845 a short case report from the Meath Hospital and County of Dublin Infirmary entitled "Neuralgia: Introduction of Fluid to the Nerve."[24]

Quoting from his description of one of the cases, we read:

> On the 3d of June a solution of 15 grains of acetate of morphine dissolved in a drachm of creosote was introduced to the supra-orbital nerve and along the course of the temporal, malar and buccal nerves by four punctures of an instrument made for this purpose.

What the instrument was he did not describe in detail until 1861, when he published a description of his syringe.[25] This was a rather crude affair, through which the fluid was injected through a hollow needle by gravitation. We thus see that to Rynd belongs the priority of discovery of hypodermic injection.

It was through Alexander Wood, however, that the hypodermic method was applied in a large number of cases and carefully written up and popularized. For that reason Wood has been generally regarded as the founder of hypodermic medication.

Alexander Wood was born in Edinburgh, Dec. 10, 1817. He came from a family of physicians, and early displayed his exceptional medical skill. While serving in the capacity of secretary to the Royal College of Physicians of Edinburgh, he conceived the idea of injecting drugs under the skin for the relief of pain. He was very much interested in the treatment of neuralgia, and was following a method suggested by Valleix of applying a succession of blisters along the course of the affected nerve. After applying the blisters for a period of time he would take them off and dress the raw surface with an ointment of morphin, to which he attributed the success of his treatment. While doing this it occurred to him to try the applications of morphin by injection directly to the affected point.

In his first report on the subject in 1853, Wood says:

> Having occasion about the end of 1853 to endeavor to remove a nevus by injection with acid solution of perchlorid of iron, I procured one of the elegant little syringes constructed for the purpose by Mr. Ferguson of Giltspur Street, London. While using this instrument for the nevus it occurred to me that it might supply the means of bringing some narcotic to bear more directly than I hitherto had been able to accomplish on the affected nerve in neuralgia. I resolved to make the attempt and did not long lack opportunity.

This led to Wood's experimentation with hypodermic injections, which culminated in his classic contribution on neuralgia.[26] Quoting from the work, some of Wood's conclusions were:

1. Narcotics injected into the neighborhood of the painful point of a nerve affected with neuralgia will diminish the sensibility of that nerve, and in proportion diminish or remove pain.
2. The effects of narcotics so applied are not confined to this local action, but reach the brain through the venous circulation and there produce narcotic effects.
3. In all probability what is true in regard to narcotics would be proved to be equally true in regard to other classes of remedies.
4. The small syringe affords a safe, easy and almost painless method of exhibition.
5. Destitute as we are of any precise experiments as to the applicability of cellular tissue as a medium for the resorption of medicinal agents, the experiments made with the syringe show that it seems to offer an excellent surface for the absorbent action of the venous system.
6. The method now detailed seems as extensively applicable as any of the methods of applying remedies to the skin, whether enepidermic, iatrolepic, endermic, or by inoculation.

Wood's work immediately won recognition, and was received enthusiastically, especially by Charles Hunter.

Although Wood appreciated that general or systemic effects might result from local injections of drugs, he still seems to have entertained the idea that the maximum benefit from the hypodermic was exerted at the place of injection. It remained for Hunter[27] in 1859 to give the important demonstration that it is unnecessary to make the injection at the seat of the pain.

It would take us outside the limits of this paper to trace the history of hypodermic medication in detail after that date. The name of Ruppaner of Boston, however, who is responsible for the introduction of the method into the United States, must not be passed unmentioned. Ruppaner's work[28] appeared only a few years before the Civil War, and it is interesting to note that John S. Billings,[29] in his reminiscences of the Civil War, speaks of the hypodermic syringe as being a constant requisition at that time.

On reviewing the history of the subject it is well to note again that just as in the case of intravenous injection, so in the case of hypodermic injection, opium was one of the first, if not the first drug thus administered. In reading about the extensive application of opiates by this method I have been further struck by the enormous doses which our predecessors used to administer. Half a grain doses of morphin were very commonly given. Hunter mentions a man with delirium tremens whom he gave an injection of three-quarters grain of morphin acetate, and another patient actually received an injection of 1 grain.

A word as to the development of the hypodermic syringe: The syringe employed by Rynd seems to have been devised by himself. Wood, as already noted, first used a syringe made by Ferguson. Soon after that various modifications of Ferguson's syringe were introduced. I need here mention only the instrument of Pravaz, which is the prototype of our modern hypodermic syringe. Charles Pravaz of Lyons was deeply interested in the treatment of aneurysms, and while experimenting with methods of introducing caustics into aneurysms and nevi he thought of injecting a

23. Pfender, C. A.: Washington Med. Ann., 1911, x, 346.
24. Rynd: Dublin Med. Press, March 12, 1845.
25. Rynd: Dublin Quart. Jour. Med. Sc., 1861, xxxii.
26. Wood, Alexander: New Method of Treating Neuralgia by the Direct Application of Opiates to Painful Spots, Edinburgh Med. and Surg. Jour., 1855, lxxxii, 265.
27. Hunter, Charles: Med. Times and Gaz., March 5, 1859.
28. Ruppaner: Boston Med. and Surg. Jour., 1860, lxii.
29. Billings, John S.: Tr. Coll. Phys., Philadelphia, 1905, xxvii, 117.

solution into the sac by means of a needle and syringe. He had such an instrument constructed, and this soon became known as the Pravaz syringe. In January, 1853, Pravaz[30] reported his results of injecting iron perchlorid into aneurysms by this method. The Pravaz syringe is the model copied and modified by later manufacturers. Those who are interested in the development of the hypodermic syringe should not fail to visit and inspect the remarkable collection of these instruments in the care of Dr. Lamb at the Surgeon-General's Museum in Washington.

A RATIONAL TREATMENT OF THE MORPHIN HABIT

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The method of treatment for chronic morphinism which will be discussed has been successfully employed in a large series of cases at the House of Correction and Sceleth Hospital, Chicago, and in private practice. An outline[1] of the method appeared in THE JOURNAL of the American Medical Association early in 1915, and in a series of papers devoted to the treatment of chronic drug addictions, which was published in THE JOURNAL about half a year later,[2] the method was discussed in more detail and its advantages over other regimens in vogue pointed out. The treatment, therefore, is fairly well known to the profession at large.

A more comprehensive description of the method is in order because the previous descriptions have omitted many of those qualifying details which are of such great moment in the successful application by others of a new plan of therapy, and particularly because the plan is simple, nearly always successful, and is readily carried out even in a private hospital or at the patient's home, and by any physician.

It is not my purpose to compare the method with others perhaps better known, such as the Lambert-Towns,[3] the Pettey[4] or the Erlenmeyer[5] treatment. Such a comparison is unnecessary. On the basis of results, convincing evidence seems available to show that this method is a rational and at the same time an easily applied treatment. Those who are interested in a dissection of other methods commonly employed are referred to the papers already mentioned for a very thorough comparative analysis.

Though there are many angles to the plan; its essence rests in the formula:

Scopolamin hydrobromid	gr. 1/100
Pilocarpin hydrobromid	gr. 1/12
Ethyl-morphin hydrochlorid	gr. 1/2
Fluidextract cascara sagrada	♏ 15
Alcohol	♏ 35
Water	qs. ad ℥ 1

The amount prescribed and the indications for its continuance or modification vary with the case. Patients who are addicted to the use of more than 10 grains of morphin a day are given 60 minims of the mixture every three hours, day and night; for six days. The dose is reduced to 30 minims on the seventh day, to 15 minims on the eighth day, and on the ninth day to 15 minims three times during the day only. On the tenth day the mixture is discontinued altogether and tonic treatment begun, as outlined below.

Addicts accustomed to the use of less than 10 grains of morphin a day and more than 5 are started with a dose of 45 minims, which is reduced on the seventh day in a manner analogous to that just detailed; while to those who have been taking less than 5 grains, only 30 minims are given as an initial dose.

The dangers associated with the use of this combination are trivial. Scopolamin delirium occurs in about 4 per cent. of the cases. Should delirium develop, the scopolamin should be omitted for a few doses, and as the condition improves, added once more in smaller quantities. The greatest danger, however, collapse, does not arise from the scopolamin mixture per se, but is incidental to the withdrawal of the morphin. The tendency to collapse is undoubtedly favored by the presence of two drugs which act on the vagus—scopolamin, which is vago-inhibitory, and pilocarpin, which is vagotropic. If the pulse falls below 40 or goes above 120 per minute, the mixture is stopped and the patient is given the only drug which can offset the collapse, namely, morphin itself. The latter is injected in one-third grain doses every fifteen minutes until results are obtained. Patients in collapse should not be given too large doses of morphin, or its derivatives, after treatment has been in progress for several days, as the dose to which the addict has been accustomed is likely to be overwhelming. The vomiting and insomnia which occur more or less constantly are not due to the scopolamin mixture, but occur with any treatment, and accordingly are not to be looked on as special complications.

It may be stated as a safe criterion that if on the third or fourth day of treatment by this method the pupils are dilated and react to light and accommodation, the patient is reacting properly and the outlook is good.

The rationale of this combination is that scopolamin hydrobromid is one of the atropin series, and, so far as atropin is the physiologic antidote to morphin, represents the specific element of the mixture. In the strict sense, of course, it is not a specific. Its action, in the main, is similar to that of atropin, but in certain essential particulars it is more suitable for the treatment of chronic morphinism. Unlike atropin, it is sedative, causing a depression of the central nervous system; and its action on the peripheral nerve ends is more powerful. Furthermore, even in small quantities it depresses the brain, 1/120 grain, according to Cushny, being sufficient to produce sleep; it is apparently less toxic than the other members of the atropin group; and finally, quoting from the same observer, "it is most effective as a hypnotic when sleep is prevented by motor excitement, and the sleep seems to arise from the relief of this condition and not from depression of the consciousness." Thus, while possessing the chief properties of atropin, it is additionally valuable because it tends to offset such abstinence symptoms as the peripheral pain, insomnia due to motor excitement, and cerebral unrest; in the fact that it is a less dangerous drug than atropin, and because its action is manifest with small doses.

Pilocarpin acts at the same point as does scopolamin, but in an antagonistic way. It is used, therefore, to combat certain undesirable by-effects of the scopol-

30. Pravaz: Compt. rend. Acad. d. sc., 1853, xxxvi, 88.

1. Sceleth, C. E.: A Treatment for Morphin Addiction, Correspondence, THE JOURNAL A. M. A., March 13, 1915, p. 927.

2. The Morphin Habit, Therapeutics, THE JOURNAL A. M. A., Nov. 20, 1915, p. 1815; Nov. 27, 1915, p. 1912.

3. Lambert, Alexander: The Obliteration of the Craving for Narcotics, THE JOURNAL A. M. A., Sept. 25, 1909, p. 986.

4. Pettey, George E.: The Narcotic Drug Diseases and Allied Ailments, F. A. Davis, Philadelphia, 1913.

5. Cushny, Arthur R.: Text Book of Pharmacology and Therapeutics, 1915.

amin, such as the drying up of the secretions, the dilatation of the pupils, the acceleration of the heart (atropin vagus inhibition), and of the respiration and to promote secretion and excretion.

Ethyl-morphin hydrochlorid (dionin, Merck), of which the patient receives 4 grains a day during the first six days of treatment, that is, when given 1 fluidram of the mixture, serves merely as a substitute for the morphin withdrawn. It may be remarked at this point, in reply to possible adverse criticism relative to the giving of one habit-forming drug as a substitute for another, that the administration of dionin for nine days (in diminishing doses during the last three) is insufficient to cause a new habit, and that such a contingency actually does not arise.

The remaining constituents of the formula require no special word of explanation.

As regards the other steps in this mode of treatment, a few remarks will suffice. The patient on admission is put to bed, given three compound cathartic pills, followed by a saline cathartic (Epsom salt), and at once started on the scopolamin mixture. During the first few days of the course the diet should be light and easily assimilable, and liquids should be pushed; the patient should drink 3 pints or more of water a day. On the tenth day, at which time the mixture is discontinued, strychnin nitrate, one-thirtieth grain, is given for three doses; the following day the amount of strychnin is reduced to one-sixtieth grain, which is continued three times a day for a week.

By the fifth day, as a rule, the patient's desire for morphin is gone. He then manifests a desire for a more substantial diet and begins to put on weight rapidly. When the mixture has been stopped, and the patient's strength permits, graded exercises, in the open if possible, are instituted with the purpose not only of improving his physical condition but of allowing him to acquire a bodily fatigue, which is recognized by all as the best antidote to the insomnia—the abstinence symptom most likely to persist and the most difficult to conquer. A warm bath of 110 F. for ten minutes, or a neutral bath of from 94 to 98 F. for twenty minutes, will often relieve restlessness and insomnia. Carbonated waters are very gratefully received.

Contrary to the idea of many, morphin is not taken by the addict after the first few weeks, with the purpose of producing a pleasurable relaxation. Taken originally to combat pain, relieve exhaustion, etc., it is continued in increasing doses to prevent the much feared abstinence symptoms, or, as it is put by the habitué himself, "to make himself normal" again so that he can accomplish his usual work in some degree, not extraordinary results, as some believe.

The "cure" which obviates these abstinence symptoms to the greatest extent, without at the same time introducing new and dangerous factors, such as collapse, may be regarded as the best regimen available. And it is to this feature of the plan that I would particularly draw attention. In considerably over 1,500 cases of variable severity I have rid morphin addicts of their habit with no medical treatment in any form except the scopolamin mixture, the initial saline laxative, and the terminal strychnin administration. These 1,500 patients received no morphin as such whatsoever. Severe collapse was not encountered, the only abstinence symptoms of any importance being insomnia, vomiting and diarrhea; while in a small percentage of cases, scopolamin delirium developed.

This relatively simple method, as already stated, has the further advantage of not requiring institutional care. It can be successfully carried out with the aid of an intelligent nurse in any private hospital or in the patient's home. Indeed, the average physician in general practice need have no hesitancy in undertaking the treatment, if my experience is to be accepted as a criterion.

In about 2,500 additional cases, I have employed one of two modifications of this therapy. The first of these I have already touched on, namely, the giving of morphin in one-third grain doses to control collapse. This may occur in some cases, chiefly because of some previous impairment of the heart. A great deal of morphin is rarely necessary. I may cite as an illustration a young man recently under observation, who had been accustomed for six years to a daily dose of 20 grains of morphin. In this case an entirely successful result was obtained with the use of only 2¼ grains of morphin, through the entire course of treatment.

The second modification is the quick reduction method, so far as the term is applied to the withdrawal of morphin as such. This plan is that generally known as the rapid reduction method, and is carried out as follows: The patient, when first presenting himself, is given one half of his accustomed dose of morphin distributed over twenty-four hours. On the following day this amount is halved, being administered at the accustomed time. The next day one eighth of the usual amount is given; after which morphin is entirely discontinued. During this process of reduction, the scopolamin mixture is administered as previously outlined.

This regimen has the advantage over the first two described in that the patient is entirely free from abstinence symptoms, which are unnecessary in the vast majority of cases, as indicated by our statistics based on the use of the scopolamin mixture alone. Since the enactment of the Harrison law, I feel that the giving of morphin during the treatment, in quickly decreasing doses, is more justifiable than formerly. Before the law went into force, and morphin was easily obtained, it served as a valuable warning to many individuals to allow them to suffer a few pangs of deprivation—of course, never to the danger point, merely in order to disillusionize them as to the comfort with which the habit could be conquered. Today, with the drug no longer accessible, the likelihood of a recurrence is less, and the lesson is not so urgently needed. The chief indication, however, for the employment of the third method is in individuals of considerably impaired strength, in those with an enfeebled myocardium, and, to some extent, in private work. Old age is no bar to treatment; a patient aged 72 years, who used laudanum for the past thirty-two years and was using 4 drams daily, was treated with 15 minims of the mixture every three hours, and has been free from the habit for the past eight months.

As to complications in general, any condition that will not produce acute pain will be improved by the removal of the drug habit.

Heroin cases should be treated the same as morphin addicts. For opium addicts 30 minims of the mixture should be administered every three hours, and the ethyl-morphin hydrochlorid reduced to one-eighth grain per dose. For cocain addicts, if it is desired to have the patient avoid any discomfort, he should be given 15 minims of the mixture every three hours

without the ethyl-morphin hydrochlorid for three days; when cocain is used alone it is always safe to discontinue it abruptly without any treatment, as there is never any danger of collapse. With the morphin addict who is using 10 grains or more a day, however, if it is abruptly or gradually discontinued, without suitable treatment, there is danger of death from cardiac collapse. I doubt if the system can assimilate more than 10 grains of morphin at a dose. I make no distinction between the patient using 10 grains or 60 grains per dose.

Certain phases of chronic morphinism present different problems. Chief among these, perhaps, are patients first seen in collapse after long enforced abstinence or after misdirected treatment elsewhere. It is in this type that the mortality is highest, for frequently the patient's condition is so serious that morphin and cardiac stimulants are no longer of avail. There were seven deaths from the middle of July, 1911, to February, 1916. These patients were under observation on an average of five days each, this average being as high as it is because one patient lived eight days and another thirteen.

I am informed by Dr. E. R. LeCount, who made the postmortem examinations, that the only noteworthy conditions found were in one instance bronchopneumonia with scars and leptomeninges resembling those produced by syphilis. In three others there was bronchopneumonia, and in one of these an associated hypertrophic pulmonary emphysema. In another case the morphinism was accompanied by alcoholism.

Morphinism associated with delirium tremens is a serious type. The indication here is to treat the delirium tremens, at the same time giving the patient sufficient morphin to keep him comfortable. The cocain habit when combined with the use of morphin, which was true in about 35 per cent. of our cases, presents no particular difficulties. In the matter of prophylaxis, I would call attention to certain rules in the use of morphin by physicians by the observance of which the spread of the habit can be materially restricted. It is a terrible stigma on our profession that in 75 per cent. of the cases of chronic morphinism, the drug was first administered by a physician; and that in less than 10 per cent. it was not given for its prime indication—incurable pain. Too often it is not realized that small continued doses are dangerous; any amount of morphin sufficient to alleviate pain or to ease the patient is enough to create a habit. The contention that normal persons never become addicts in our experience is not true. Even in a strong-willed individual the regular use of a narcotic for three weeks can establish the habit; while, after three months of such addiction, it is almost impossible for the patient unaided to discontinue its use. Again, when morphin is prescribed in the postoperative treatment of cases, it should be the rule not to discharge the patient until he has been without the drug for at least three days. If this precaution is not observed, the tendency is great to resume its use at home. Over 85 per cent. of our morphin addicts use the hypodermic method. Incidental to this feature is to be emphasized a defect in the Harrison law, in that it makes no provision for the restricted sale of hypodermic syringes.

As to recurrences following this plan of treatment, there is to be said: Abstention from the use of morphin depends not on the use of this drug or that drug, but entirely on the individual. The man who has been given the drug for the alleviation of severe pain, the *cause of which has been removed,* will probably not return to the habit. This statement must be modified as follows: If he returns to associates who use the drug, he will very likely relapse; but even if he changes his environment, little can be expected of him if he was originally endowed with no strength of character. The human zero plus or minus the morphin habit equals zero! Our conclusion, then, as to the likelihood of recurrence may be formulated thus: The outlook is good for the man of some moral, mental and physical strength, for whom an opportunity to work can be secured in a healthy environment. The comparative difficulty of securing morphin today is an added factor favoring such an individual.

SUMMARY

There is no specific treatment for the morphin habit. The plan outlined above, however, seems to meet most accurately the specific indications from the pharmacologic point of view. Other advantages of this regimen are its simplicity, in that it can be carried out in private hospital or home, and by the nonspecialist; and its freedom from abstinence symptoms, especially the more dangerous ones.

On the other hand, no plan of therapy, however logical or successful, can assure freedom from recurrence. This is entirely a matter of the individual. One with no natural force of character is likely to relapse, as is also one who returns to a former vicious environment; while the man of higher type, who is anxious to reform, is capable of doing serious work and if given the opportunity, has an excellent chance of permanently remaining cured.

I wish to acknowledge the splendid assistance that, from time to time, has been given me by Dr. A. F. Beifeld, both in clinical observation of many of the patients whose treatment is considered here, and also for help in the preparation of this article.

Twenty-Sixth Street and California Avenue.

TREATMENT OF CASES OF EPIDEMIC MENINGITIS

ILLUSTRATING THE IMPORTANCE OF FREQUENT REPETITION OF THE INJECTION *

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The most common two mistakes in serum treatment of epidemic cerebrospinal meningitis seem to be giving too few doses of serum if the patient improves considerably after the first one or two injections, and failing to persist with the serum if the improvement is very slow. It has been the experience of the meningitis department during the past five years that it is rarely safe to give less than four doses of serum on consecutive days, even if the improvement clinically is very rapid and the organisms disappear from the fluid after one or two injections. In cases which have been running on for some time and in which the patients are evidently improving when first seen, one or two injections of serum are sometimes sufficient. Occasionally in a case seen very early and clearing up quickly, only three injections may be given. A case of average severity usually requires from four to

* From the Bureau of Laboratories, Department of Health, City of New York.

seven injections. It is safer to give the injections on consecutive days until it seems evident that the patient is out of danger, than to skip a day or two when a slight improvement occurs, thereby giving the organism a chance to increase. Puncture for the relief of pressure may have to be done several times during convalescence. At such punctures, a little serum may be injected, especially if a large amount of fluid is withdrawn. In a small percentage of cases—from 5 to 10 per cent.—a large number of injections may be necessary before the termination of the case. A certain number of such cases terminate fatally.

REPORT OF CASES

The following cases, recently treated by the department, illustrate very well the necessity of patience and persistence in administering serum when the progress is discouragingly slow:

CASE 1.—H. M., man, aged 19, seen first July 16, 1915, with negative past history, complained of headache and pain in back, July 5, which resembled a mild influenza and cleared up in a few days, the patient being quite well until July 14, when the headache returned and vomiting occurred. There was also a chill. When examined on the 16th, he was delirious; there was marked stiffness of the neck; Macewen's and Kernig's signs were positive; the knee jerks were slightly increased; the pupils were equal and reacted to light; the pulse was 60 and regular; the temperature was 101.4; respiration was Biot in type; there were no paralysis and no eruption. Fifty c.c. of cloudy fluid were withdrawn by lumbar puncture and 20 c.c. of antimeningitis serum injected. The fluid showed a great increase in cells, 95 per cent. being polymorphonuclears, and intracellular gram negative cocci by smear; albumin and globulin were both greatly increased; there was no reduction of Fehling's solution. July 17, the condition of the patient was somewhat better; the temperature was normal; he was still delirious. Forty-five c.c. of very cloudy fluid were withdrawn, and 20 c.c. of serum injected. Punctures were repeated and serum was administered July 18, 19, 20, 21 and 22. Beginning July 19, the amount of serum given was increased from 20 to 35 c.c., the amount of fluid drawn being at all times greater than this, and, until the 21st, exceedingly purulent, an inch or more of pus settling to the bottom of a large test tube containing from 25 to 30 c.c. of fluid. That of July 22 was much clearer. There continued to be a pure culture of meningococci until the fluid of July 21, though that of the 19th was scanty. Fehling's solution was not reduced until the 21st; that of the 22d showed good reduction. The albumin and globulin were always greatly increased. The temperature was normal beginning with the 17th. Much of the time there was great difficulty in swallowing owing to the extreme retraction of the head, and it was necessary to give small quantities of food at frequent intervals. July 23 and 24, as the fluids had been sterile for two days and as the patient seemed considerably better, no punctures were done. On the 25th, the puncture was done to relieve pressure; 45 c.c. of fairly clear fluid were drawn and 15 c.c. of serum injected. This fluid was sterile and gave a good reduction of Fehling's solution. For the next five days, the patient seemed to be doing well; the temperature was normal; he became clearer mentally; the retraction of the neck lessened, and he was able to take nourishment very well. July 31, however, a relapse occurred; the temperature went up to 103; the delirium returned. Forty-five c.c. of very purulent fluid were withdrawn and 35 c.c. of serum injected. This fluid showed degenerated extracellular gram negative cocci by smear, but the culture was sterile. The punctures were repeated daily until August 10, large amounts of fluid, from 50 to 75 c.c., being withdrawn; but since the cultures were constantly sterile, small quantities of serum, from 15 to 20 c.c., were injected. The fluids of August 5, 6, 8 and 9 showed a reduction of Fehling's solution. August 6, 9, 13 and 16, an autogenous vaccine was given in doses of 250, 500, 750 and 1,000 million; August 11, 13 and 16, the punctures were repeated, the fluid becoming clearer and showing a good reduction of Fehling's solution, the quantity obtained by the last puncture being only 30 c.c. August 19, the condition was so much improved that a puncture was not considered necessary. Twenty punctures had been made. Much of the time the patient was desperately ill, the family gave up hope almost entirely, and considerable persuasion was necessary to induce them to allow the treatment to be continued. The patient was extremely emaciated, as most of the time during the relapse, swallowing had been very difficult owing to the extreme retraction of the head. However, the recovery went on smoothly, though slowly. The absence of fever was very unusual, the temperature being elevated for only a day or two at the onset and again at the beginning of the relapse. Curiously enough, when the delirium had entirely cleared up, he remembered nothing of his illness or of the punctures, but simply that he had gone to bed with a very severe headache.

The other two cases were somewhat similar and need not be given in so much detail.

CASE 2.—W. F., man aged 20, seen March 24, had had pulmonary tuberculosis in an inactive form for two years; he had not felt well for two weeks, but had been acutely ill only two days; the symptoms were typical of meningitis, and on lumbar puncture, 60 c.c. of cloudy fluid were withdrawn and 20 c.c. of antimeningitis serum injected. The fluid showed meningococci both by smear and culture; Fehling's solution was not reduced. March 25, the temperature had fallen from 104 to 100.5, and the patient's condition was better; 75 c.c. of clear fluid were withdrawn and 20 c.c. of serum injected. This fluid showed meningococci by smear but not by culture, and Fehling's solution was not reduced. March 26, the temperature was normal, but punctures were repeated and serum was given on that and the following day; the fluid in both instances was sterile, and on the 27th reduced Fehling's solution. The patient continued to improve until the 30th, when the temperature rose to 102.2, and there was severe headache. Fifty c.c. of cloudy fluid were withdrawn and 20 c.c. of serum given. This fluid was sterile; Fehling's solution was slightly reduced. The punctures were repeated March 31 and April 1, 2 and 3, the fluid of April 1, only, showing meningococci; that of April 3 gave a good reduction of Fehling's solution. The temperature was normal, April 2; the patient continued to improve until April 12, when he had a second relapse; the temperature was 101.5; he had a severe headache; lumbar puncture yielded 60 c.c. of cloudy fluid; 20 c.c. of serum were given. This fluid showed extracellular and intracellular meningococci, but the culture was sterile; Fehling's solution was not reduced. By this time the family was quite worn out by the care of the patient, and he was taken to the Post-Graduate Hospital, where he recovered under serum treatment from the second relapse and has been well ever since. A second relapse is very unusual.

CASE 3.—W. R., aged 13 years, seen July 26, had been taken sick July 24; the symptoms were characteristic; there was herpes on the lips, and the patient was delirious. Fifty c.c. of cloudy fluid were withdrawn, showing meningococci by smear and culture; Fehling's solution was not reduced; 20 c.c. of serum were given. Lumbar punctures were done daily until August 6, except July 30, August 3 and August 5, when improvement clinically and in the fluid had seemed to warrant their omission. At no time, however, had the temperature been normal or the patient's general condition very encouraging. August 6, the patient suffered considerably from shock at the time of puncture, and no more punctures were attempted until the 12th. At this time the patient was greatly emaciated; the head was retracted and swallowing was almost impossible; the temperature was 104; 50 c.c. of turbid fluid were withdrawn and 10 c.c. of serum injected without untoward symptoms. A small quantity was given on account of the shock at the previous injection. This fluid showed meningococci by smear and culture, and no reduction of Fehling's solution; punctures were repeated, August 13, 14, 15, 16, 17, 19 and 21, no serum being given at the last puncture. Seventeen punctures were done. There were no organisms after August 15, and there was a good

reduction of Fehling's solution after the 16th. An autogenous vaccine was given, August 13, 17 and 21, in doses of 250, 500 and 750 million.

COMMENT

Autogenous vaccines have not been used in a sufficient number of cases to show their value definitely. However, it is the custom of the department to use them in cases that tend to become chronic and in a number of instances they seem to have been beneficial. In Case 2, vaccine was not used, as both the first attack and the relapse cleared up promptly. It has been the experience of the department that doses of serum larger than 20 c.c. need to be given with extreme caution, even though very large amounts of fluid are withdrawn. It is to be remembered that relief of pressure is in itself of considerable therapeutic value. Untoward effects from the withdrawal of large quantities of fluid have never been observed. Of course, the punctures are always with the patient lying down. The serum treatment should be continued until the fluid has been sterile for two or three days and until the patient clinically is much improved. In Case 1, for instance, no cultures grew during the relapse, but eleven punctures were done, followed in all cases but the last one or two by the administration of serum.

It will have been noticed in the case reports that considerable prognostic importance is attached to the reduction of Fehling's solution. This has already been referred to by DuBois and Neal.[1]

A more extended study of this point is now being made. In addition to the specific serum and vaccine treatment, in which one must be guided by experience, the general treatment is of great importance. Hexamethylenamin is given as a routine. It may or it may not be excreted as formaldehyd in the spinal fluid. It certainly tends to prevent cystitis if retention develops, as it often does. Sedatives must be used if the patient is delirious or restless, preferably some preparation of opium, as it has a less depressing effect on the heart than other sedatives. The eyes, mouth, skin, bladder and bowels must all receive careful attention. Most important of all is the feeding. In many instances swallowing is very difficult on account of the retraction of the head, and the greatest patience must be exercised to induce the patient to take even a little nourishment. Feeding by rectum was resorted to for a while in Case 1. It is not, however, the object of this paper to cover fully the treatment of meningitis. Our experience in that direction has been dealt with more in detail in the summary mentioned.[1] The necessity of prolonged administration of the serum, did, however, seem worth emphasizing.

1. DuBois, Phebe L., and Neal, Josephine, B.: Summary of Four Years of Clinical and Bacteriologic Experience with Meningitis in New York City, Am. Jour. Dis. Child., January, 1915, p. 1; Streptococcus Meningitis with Report of Cured Case, Arch. Pediat., January, 1915.

Adulteration of Oysters.—Inspectors of the Department of Agriculture have found that it has been the custom of some dealers in oysters to fatten them by soaking them in fresh water. Oysters will not take up sufficient of the salt water in which they grow greatly to increase their bulk but will drink fresh water or water that is slightly salted. This practice obtains with oysters in the shell as well as those shucked. The practice lowers their food value and, according to the department, is an adulteration under Section 7 of the Food and Drugs Act. According to *Commerce Reports*, the Oysters Growers' and Dealers' Association of North America is cooperating with the Department of Agriculture in stopping interstate traffic in oysters adulterated in this manner.

DYED FUR (PARAPHENYLENDIAMIN) DERMATITIS

WITH REPORT OF FIVE CASES

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The present extensive use of dyed fur, especially of fur collars which come in close contact with the sensitive skin of the face and neck, has caused many cases of acute painful dermatitis. Although arsenic used in preparing fur may occasionally cause a dermatitis, practically all the cases are caused by the wearing of brown or black furs dyed with paraphenylendiamin. This dye is an anilin derivative with the formula $C_6H_4(NH_2)_2$ and is sold under such trade names as paramine, ursol, etc. Paraphenylendiamin is an allied and homologous compound of anilin black, and is oxidized by hydrogen peroxid and other chemical substances to form Bandrowski's base. The intermediate product of oxidation is chinondichlordiimin, which is very irritating and is the cause of dermatitis from dyed fur. Where oxidation is complete, paraphenylendiamin is not irritating, and this probably explains why the brown fur is more irritating than the black. The danger of dermatitis is also lessened by careful washing of the fur after it has been dyed.

The furs which cause this dermatitis are especially the brown fur collars worn by men, and the black pony coats worn by women. The deeper part of the hairs in the fur shows a very characteristic, artificial appearing brick red color, even though the fur may superficially appear to have a natural brown color. The pony coats usually show at some point the same brick red color, although, as the hairs are short, they usually are dyed a uniform dark black.

SYMPTOMS

Usually the skin of the "collar area" of the neck is affected. Occasionally the hands are involved, and in rare instances the dermatitis may extend widely over the body. The first symptom noticed is itching and burning. Following this, in typical cases, there is a marked redness of the skin, accompanied by some swelling or edema, and intense itching and burning. A rather dry, scaly, scarlatiniform dermatitis is the rule. Occasionally flat vesicles with oozing surfaces are present, but well marked vesicles and pustules, such as are found in poison ivy dermatitis, are absent. The severity of the symptoms varies from a small, red, itchy patch, which causes a slight degree of annoyance, to a very severe dermatitis, in which the itching and burning may be sufficient to prevent sleep. In the milder or more chronic cases, there is often formed eczema-like plaques and flat papules. Absorption of large amounts of the dye from the skin may occasion serious internal trouble, as diarrhea, vertigo, albuminuria, etc.

Many persons are not susceptible to this dye, and develop no symptoms even though the dye from the fur is rubbed off and blackens the skin to a noticeable extent. Some persons are not ordinarily troubled by wearing these dyed furs, but an acute outbreak may follow, provided the skin happens to be especially sensitive, as after a close shave, or if moisture comes in contact with the fur, as from melted snow, or in extreme cold weather from precipitation of the moisture in the breath. In other words, any factor causing the fur to become damp increases very materially the

toxic properties of the dye. The fact that certain persons are not affected for some time, even months, after wearing the fur in question, has been explained on the ground of anaphylaxis,[1] or of a gradually acquired susceptibility, or of a cumulative effect.[2] This I believe to be erroneous, and the apparent cases of a gradually acquired susceptibility are probably due to accidental causes, such as allowing the fur to become moist, etc.

DIAGNOSIS

Cases of dyed fur dermatitis are now so frequent that in all cases of acute eczema or artificial dermatitis, this condition should be thought of. In diagnosis, the localization is important. An acute dermatitis of the "collar area" of the neck, including the lobes but not the upper part of the ears, is suggestive. If the patient wears furs, these should be examined for the characteristic brick red color in the deeper part of the fur. All black pony coats are evidently dyed with paraphenylendiamin. In cases of doubt, the fur should not be worn for a short time, and the eruption, if due to dyed fur, will disappear shortly under simple treatment.

PROPHYLAXIS AND LEGAL ASPECT

Such a large percentage of persons, under certain circumstances, are susceptible to poisoning from furs dyed with paraphenylendiamin, that I believe the use of this dye should be prohibited by law. This dye is also used to dye woolens, silk hose, and as a hair dye. Dermatitis also occurs in these cases. The supreme court[3] of Michigan holds that it is a question for the jury whether or not a wholesaler of furs is responsible for damages, when cases of dyed fur dermatitis occur, especially when these dyed furs are not labeled or the purchaser warned in any way that the dyed fur may give rise to serious skin trouble. Many persons buy and wear the dyed furs for a sufficient time to have confidence in them, and when finally an acute dermatitis occurs, the connection between the dermatitis and the wearing of the dyed fur is not thought of. If the selling of furs dyed with this substance is not prohibited, there should at least be a label attached stating that paraphenylendiamin has been used.

TREATMENT

The wearing of the dyed fur must be prohibited, as otherwise treatment is unsatisfactory. Simple protectant treatment, as soft zinc paste, calamine lotion, etc., is all that is needed. Theoretically sodium bicarbonate should be of value, as it oxidizes the irritant substance chinondichlordiimin to Bandrowski's base, which is nonirritating.

REPORT OF CASES

During the present winter I have seen five patients, all adults, with dyed fur dermatitis due to paraphenylendiamin.

CASE 1.—A man who wore an overcoat with a fur collar had rather mild symptoms, itching, burning, and redness of the neck, which recurred a number of times last winter. He has been well since getting rid of the fur collar.

CASE 2.—A man wore an overcoat with a fur collar last winter with but little trouble. This fall, following a shave at a barber shop, he wore the overcoat for the first time this year. The weather was quite cold, so that the collar was turned up and came into close contact with the skin of the face and neck. A severe dermatitis followed, which he thought was the barber's itch, and treated with phenol (carbolic acid) and other antiseptics. Severe inflammation developed so that he was unable to sleep for one or two nights. He was then referred to me, and was found to have an acute, swollen, scarlatiniform dermatitis of the neck, face and lobes of the ears. Under appropriate measures the patient made a prompt recovery.

CASE 3.—A woman had worn a coat with a fur collar for several years, and had noticed some itching and irritation about the neck from it, and had consequently always worn a muffler, thus protecting the skin of the neck. A few weeks ago a red patch about the size of a dollar was noticed on the right cheek. This caused some trouble from itching. Moderate swelling was present. When the coat was put on and the collar turned up, it was seen to come in contact with the skin of the face at this point. The patient obtained a new coat, and the condition disappeared very rapidly.

CASE 4.—This patient purchased the coat this winter and had a rather subacute form of the dermatitis, located on the back of the neck, where the collar came into close contact with the skin. A large eczemalike plaque with three large flat papules was present. Itching was very marked, accompanied by some burning. The coat was worn for some time after this, an attempt being made to keep the fur from coming into contact with the skin. Recovery was slow, but immediate improvement followed when the coat was entirely given up, and natural brown furs used.

CASE 5.—A woman with a black pony coat had the typical rash on the neck, hands and forearms.

636 Syndicate Building.

1. Bunch, J. Brit. Dermat. Jour., September, 1915.
2. Blaschko, C.: Deutsch. med. Wchnschr., Dec. 4, 1913.
3. Liability of Vendors of Dyed Furs for Injuries to Health, Medicolegal, THE JOURNAL A. M. A., Feb. 14, 1914, p. 562.

ALARMING SYMPTOMS CAUSED BY DIARSENOL

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Diarsenol is made by the Synthetic Drug Company of Toronto, Canada; it is said to be the dichlorhydrate of dioxydiamidoarsenobenzol, although this is not stated in the literature accompanying the drug. It is a yellow powder put up in a sealed glass ampule, and dissolves readily in 50 c.c. of water. A yellow precipitate forms on the addition of a solution of sodium hydroxid to a watery solution of the drug, and clears on further addition of sodium hydroxid. My impression is that it takes less sodium hydroxid to precipitate and clear a solution of diarsenol than it does a solution of salvarsan.

The literature accompanying diarsenol states that on the approval of the commissioner of patents, arrangements have been made with Professors J. J. MacKenzie and A. P. McPhedran, both of the University of Toronto, to send out only diarsenol which has been tested biologically in the laboratories of the University of Toronto, under their supervision. The indications, contraindications, dose and technic of administration advised by the manufacturers is the same as that recommended for salvarsan.

Fourteen intravenous injections of diarsenol have been administered by me. Eleven consecutive doses were without untoward effect or phenomena differing from those attending the intravenous administration of salvarsan. In these cases the therapeutic result, as far as I am capable of judging in this short time, has been as good as that obtained by the use of the original drug. Not until the twelfth dose was administered did I encounter trouble.

In all the cases in which I administered diarsenol, the same preparatory measures and technic were

employed as in the administration of salvarsan. On the day prior to the operation the diet was restricted, directions given for a full glass of water to be taken every two hours, and a saline purge ordered at bedtime. After retiring no food or water, except two glasses of milk at 10 a. m. on the day of administration, was permitted until after the dose had been taken.

The technic of administration was as follows: All apparatus was thoroughly sterilized. Six-tenths gm. of diarsenol was dissolved in 50 c.c. of freshly redistilled and sterilized water, to which was added, drop by drop, a 15 per cent. sodium hydroxid solution, until a yellow precipitate formed and cleared by further addition of the sodium hydroxid. Extreme precaution was used to have the solution perfectly clear, and yet use no more sodium hydroxid than necessary. To this solution 200 c.c. of 0.9 per cent. salt solution was added. Boehm's apparatus was used, and the needle introduced into the vein without incision.

The phenomena encountered following the intravenous administration of diarsenol in the cases herein described have never been observed by me following the intravenous administration of salvarsan or neosalvarsan.

CASE 1.—Man, aged 32, weight 132 pounds, presented himself, Dec. 8, 1915. A chancre had appeared in October, 1915, followed by secondaries. Examination disclosed an indurated mass at the site of the chancre, a macular syphilid over the trunk, numerous mucous patches and inflamed tonsils. Slight ptyalism resulted from two inunctions of mercury administered at his home town. The diagnosis was so clear that the Wassermann reaction was dispensed with. General physical and laboratory examination was negative.

Treatment.—A hot bath followed by inunction of one-fourth ounce of 50 per cent. mercurial ointment was given daily until Jan. 25, 1916. Eleven ounces of the ointment were used, and at no time were signs of mercurialism observed.

All evidences of the disease had disappeared except the glandular enlargement and induration at the site of the chancre; on this account an intravenous injection of diarsenol was advised. Complete freedom from treatment was ordered until February 3, when the routine preparatory measures for the administration of the drug were ordered. A thorough physical and laboratory examination was made with negative results.

At 3 p. m., February 4, the intravenous administration of 0.6 gm. of diarsenol, following the technic described, was begun. When about 175 c.c. had been injected the patient complained of a tingling sensation of the extremities and tongue, his face was flushed, pulsation of the arteries of the neck was easily seen, and the pulse was rapid, full and bounding. This was first thought to be psychic; but as the pulse became more rapid and weaker and the respiration rapid and shallow the administration was discontinued, leaving about 50 c.c. of the solution in the container. The pulse continued to grow more rapid and weaker, the respiration more rapid and shallow, the face very red and swollen. Vomiting ensued, followed by loss of consciousness; the pupils were dilated, the radial pulse was not palpable, only one sound of the heart was discernible, respiration was not apparent, there was a drenching sweat, and the face was still swollen but colorless.

At this juncture two hypodermic injections of $\frac{1}{15}$ grain of strychnin sulphate, one of $\frac{1}{75}$ grain of atropin sulphate and one of $\frac{1}{100}$ grain digitalin were administered. Shortly the radial pulse became palpable, respiration discernible, the sweating ceased, color returned to the face, and consciousness was regained. A severe burning pain in the ball of the left foot was complained of. Gradually a normal condition ensued, except for the pain in the foot, swollen face and a feeling of severe exhaustion. The patient was assisted from the room at 5:15.

February 5, the face was slightly swollen, the urine contained albumin and hyaline and granular casts, and the patient complained of extreme weakness.

February 6, the face was normal, the urine condition was unchanged, and the patient was feeling much better. The indurated mass at the site of the chancre was entirely gone.

February 22, the urine still contained albumin and hyaline and granular casts.

CASE 2.—Woman, aged 39, weight 209 pounds, mistress of brothel, presented herself, Jan. 2, 1916. There was no history of syphilis. There was general granular enlargement. The Wassermann reaction was + + + +. A bath and mercurial inunction were administered daily until January 23. Salvarsan was advised. All treatment was discontinued and an intravenous injection of 0.6 gm. of salvarsan was administered January 30. There was no reaction or unusual phenomena.

As I was unable to obtain salvarsan, an intravenous injection of 0.6 gm. of diarsenol was administered, after the usual preparation, February 5, at 3 p. m.

After about half of the dose had been given, the patient complained of a burning of the tongue and pins sticking in the lower extremities, the pulse became full and fast, the face red and puffed. The administration was discontinued; 160 c.c. of the diarsenol solution had been given. The pulse became more rapid and weaker, and the face colorless. Nausea then developed, but no vomiting; there was slight sweating, the pulse was very weak and rapid, and respiration increased in frequency. No restoratives were administered. Gradually the pulse became stronger, and color returned to the face. At 4 p. m. the patient left the room in an apparently normal condition, except a slight puffing under the eyes and slight thickening of the lips.

February 6, the patient was feeling well; the urine was negative.

CASE 3.—Man, aged 37, weight 129, had had syphilis ten years. He had been under my care four years, with no treatment for five months. He had taken nine intravenous injections of salvarsan and neosalvarsan since 1911. Physical and laboratory examination was negative.

Intravenous injection of 0.6 gm. diarsenol was given January 24, with no untoward symptoms or phenomena differing from those following an intravenous injection of salvarsan.

February 6, at 4 p. m., after a negative physical and laboratory examination and preparation according to outline, another intravenous injection of 0.6 gm. of diarsenol was administered.

After the entire dose had been given and the needle withdrawn, a tingling sensation over the entire body was complained of; the face became red and puffed; arterial and precordial pulsation were visible; respiration was rapid; the pulse was rapid, full and bounding. Vomiting followed, the face became colorless but still swollen, and vomiting was profuse, of a yellow frothy character. Consciousness was lost, the pupils were widely dilated, the radial pulse was not palpable, respiration not discernible and sweating was profuse. Only one feeble heart sound could be heard. Soon the radial pulse was felt, and a normal condition rapidly ensued, except that the face was so swollen that the features could hardly be recognized, the eyes were closed and speech was impossible. At 8 p. m. the patient left the room feeling fairly comfortable.

February 7, he felt weak; the face was still slightly swollen; the urine contained albumin and casts.

February 9, the patient felt very good, and the swelling of the face had gone. Albumin and casts persisted.

February 22, albumin and casts persisted.

An attempt to explain the phenomena would be a reckless guess, but the strongest possibilities presenting themselves to my mind are:

1. A chemical poison, acting direct, or through the suprarenals, on the vasomotor center.

2. Shock, either (*a*) surgical or (*b*) anaphylactic.

I am inclined to the first explanation (chemical poison).

ARSENOBENZOL IN THE TREATMENT OF SYPHILIS

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Arsenobenzol is an arsenic compound presented to the medical profession by Dr. Jay F. Schamberg[1] and his associates, Drs. G. W. Raiziss and John A. Kolmer, from the Dermatological Research Laboratories of the Philadelphia Polyclinic for the treatment of syphilis.

The first injection was given by us, Nov. 13, 1915. In a series of 184 injections given to seventy-five patients suffering with syphilis in its various stages, we believe some conclusions as to the value of this remedy can be drawn. Its action has been uniform, its toxicity low, and its therapeutic results have been excellent. The immediate reactions have been almost negligible, and remote untoward results entirely absent. We have employed it in both early and late cases, including those with primary lesions before eruptive manifestations have occurred; in the so-called secondary and tertiary stages; also in latent cases, and those involving the cerebrospinal system.

The drug as furnished to us has been in ampules containing 0.4 gm. each. We have administered it in dosage of from 0.1 to 0.5 gm. The average amount given by us thus far has been 0.4 gm. It is a yellowish powder, which goes into an acid solution in boiling-hot water without oxidation. This acid solution must be neutralized before being injected.

The technic employed by us for the administration of arsenobenzol intravenously is as follows:

For an average dose of 0.4 gm., 50 c.c. of boiling-hot water, which has been redistilled on the same day, is poured into a mixing cylinder of a capacity of 250 c.c. The drug is then sprinkled on the surface of the water, after which the glass stopper is inserted and the flask vigorously shaken. The average time required for complete solution is about two minutes. After making sure that no gelatinous particle remains, a solution of sodium hydroxid of 15 per cent. strength is added, drop by drop, from a pipet. At first, a cloudy precipitate forms, but on further addition of the sodium hydroxid solution (usually about 15 drops in all), the arsenobenzol goes into a perfectly clear, canary-yellow solution.

A small pledget of sterile cotton is now inserted into a sterile funnel, boiling-hot water poured over it to clear it of small particles, and the solution is filtered through it into a sterile graduate, and cold water, which has been previously redistilled and boiled, is added until the solution measures 100 c.c. It is now ready for injection.

The apparatus used by us for injection (Fig. 1) consists of a percolator of the Oldberg type, made by Whital, Tatum & Co., fitted with a perforated rubber stopper connected with pure gum, thick-walled tubing about 2 feet long. Just back of the connection with the needle is a glass tube, serving as a window for the observation of the blood which flows into the tube when the needle is inserted into the vein.

A small amount of distilled water is poured into the percolator, the tube freed from air, and the needle attached and then inserted into the vein, which has been previously distended by means of a constrictor. When the operator is assured that the rate of the flow is satisfactory and that there is no subcutaneous infiltration, the solution is poured into the percolator and allowed to run slowly into the vein. Large needles and concentrated solutions of arsenobenzol should be avoided.

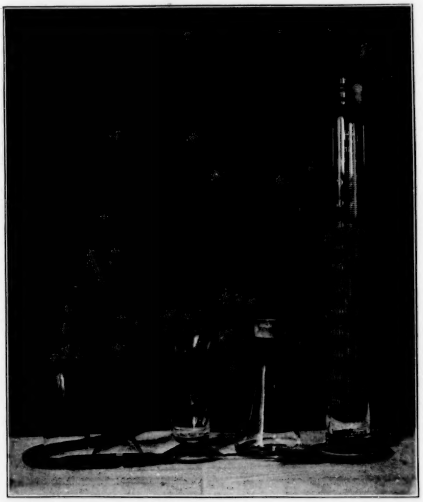

Fig. 1.—Apparatus used for injection of arsenobenzol. The percolator with rubber tubing attached is on the extreme left and the mixing cylinder on the extreme right.

Of the seventy-five patients treated with arsenobenzol, eight had primary lesions, six had primary and secondary lesions, thirty-one had late manifestations or latent syphilis, twenty-eight had lesions limited to the central nervous system, and two had diseases other than syphilis, one being blastomycosis and the other vulvovaginitis.

Most of the patients were given mercury in addition to the arsenobenzol, but fifteen patients have had either no medication other than arsenobenzol, or none for periods varying from a few months to several years. Of these, there were three with primary lesions which healed within one week after an injection of from 0.2 to 0.3 gm.; one primary with marked secondary manifestations (Case 1, Fig. 2) which healed promptly with 0.2 gm.; one arthritis, with immediate cessation of symptoms after internal mixed treatment had failed; one case of ulcerative and gummatous lesions of the thigh (Case 2, Fig. 3) with prompt healing; one case of squamous palmar syphiloderm, which yielded quickly, and five cases of nervous system lesions, all of which improved.

Three patients who have syphilis complicated with diseases ordinarily considered as contraindications for intravenous arsenic medication were given from one

1. General News, THE JOURNAL A. M. A., Dec. 18, 1915, p. 2179.

to four injections. In no case was there any noticeable reaction. One of these patients has a chronic nephritis and cystitis, one diabetes mellitus, and one aortic insufficiency. All have improved under the treatment.

Two patients have been given three intraspinal injections of autogenous serum, a modified Swift-Ellis technic being used. No pain resulted from two of the injections, but the second injection given to one of the patients gave rise to a slight discomfort during the night.

Fig. 2 (Case 1).—Extragenital lesion, with marked secondary manifestations; duration, ten weeks; 0.2 gm. arsenobenzol administered, Dec. 31, 1915. Marked reaction followed and continued for twenty-four hours. Patient was seen, Jan. 12, 1916; lesion had healed and symptoms subsided; no other treatment during the interim.

Following the 184 injections, reactions were observed in ten patients. Of these, six may be classed as "doubtful," and amounted to nothing more than "a queer feeling," or to a sensation described as "slightly upset." One patient became flushed and complained of "a feeling of fulness," which passed away within twenty minutes after the injection.

The remaining four patients suffered reactions classed as "definite." Of these, one patient (Case 1, Fig. 2), who had had an unrecognized extragenital lesion for three months and was extremely toxic, became nauseated, vomited, and suffered from an exaggeration of all his symptoms for twenty-four hours following the first injection. No reaction, however, occurred after the subsequent injections. Two patients were free from any noticeable symptoms after the first and second injections, but were nauseated, and vomited at least once, after the third injection; and one patient, who had had no reaction after the first injection, was nauseated after both the second and third. As yet no intramuscular injection of arsenobenzol has been administered by us, but there appears to be no reason why it should not be given in that manner, if desired.

Fig. 3 (Case 2).—Ulcerative and gummatous lesions on thigh; duration, fifteen years; 0.2 gm. arsenobenzol administered, Jan. 12, 1916. By January 20 the lesions were healed; no other treatment in the interim.

CONCLUSIONS

Arsenobenzol, together with mercury, offers as good a method of treatment of syphilis as any heretofore used.

In its uniform and nontoxic action, arsenobenzol commends itself as a remedial agent of great value in the treatment of syphilis, and its successful preparation marks an achievement in American chemotherapy.

While a sufficient experience has not as yet been had from which to draw ultimate conclusions, we believe its therapeutic accomplishments, together with its safety of administration, recommend its continued employment.

RETARDED OSSIFICATION AS AN ETIOLOGIC FACTOR IN TRAUMATIC ARTHRITIS AND EPIPHYSITIS

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The ossification of bone, in the normal process of development from birth to adolesence, gives characteristic roentgenologic appearances to the joints at different ages. For various reasons, ossification may be retarded or accelerated, and the appearance of the joint will be changed accordingly.

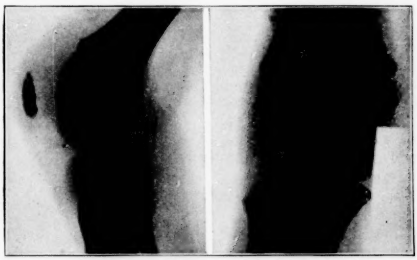

Fig. 1.—On left, lateral view of knee joint in Case 2. Appearance practically the same as in Case 1. Note small size and irregular ossification of patella. On right, anteroposterior view of knee joint in Case 2. Appearance practically the same as in Case 1. Note irregular ossification of the outer side of the epiphysis of the femur and tibia.

In an analysis of about 1,000 cases made in the Roentgen department of the Children's Hospital in Boston, the late Dr. Thomas M. Rotch was able to arrange a classification of the roentgenologic appearance of the wrist joint at different ages for normal children; the results corresponded closely to those of the earlier work of Pryor. Dr. Rotch found that the normal changes which take place in the bones of the wrist correspond so closely to those of the other joints that, in the great majority of individuals, the wrist may be accepted as a fairly correct index of general development; he also found that the normal process of ossification, as shown by the wrists, was frequently retarded and, in connection with such cases, he called attention to the danger of strain; but, so far as I know, gave no specific illustrations.

I have had the opportunity of observing three cases in which retarded ossification seemed to be the chief etiologic factor in the production of traumatic arthritis or epiphysis:

CASE 1.—A boy, aged 7 years and 8 months, complained of a painful swelling of the left knee and ankle. Family history was negative. The patient had always been very active and always well with the exception that during the past year there had been transitory swellings in joints other than those now affected. The present illness began suddenly several days before with pain and swelling in the left knee and ankle. There was no pain when the patient kept quiet, but walking was painful and caused increased swelling.

The patient was well nourished, and his skin and mucous membranes were of a good color. Examination of the heart, lungs and abdomen was negative. The joints, with the exception of the left knee and ankle, appeared to be normal. The left knee was swollen but not reddened; on palpation it was slightly tender, fluctuated and evidently contained fluid. The left leg could not be fully extended or flexed without causing pain. Muscle spasm was present. The left ankle joint presented practically the same condition as the knee. The temperature was elevated about a degree, and the pulse rate was a little over 100. Urine examination was negative.

Fig. 2.—On left, wrist joint in Case 1, boy, aged 7 years and 8 months. Ossification development corresponds to that of a child about 4 years old. On right, normal wrist joint for a boy the age of the patient.

The patient was given moderate doses of acetylsalicylic acid (aspirin) and told to report in a few days. A week later the condition was practically unchanged. A roentgenogram was taken of the left knee, and the general appearance of the joint was found to correspond to that of a child several years younger; in addition, there was present an irregular ossification of the patella and marked roughening with irregular bony deposits on the outer side of the epiphysis of the femur and tibia (Fig. 1).

The von Pirquet test was negative.

The case presented such unusual features that the patient was sent into the Albany Hospital for observation. In the hospital the boy was kept in bed, and within twenty-four hours all the tenderness and swelling had disappeared from the left knee and ankle. The temperature, which was slightly elevated on admission, dropped to normal in a few hours. The subcutaneous tuberculin test was negative, as was also the Wassermann test.

The peculiar roentgenographic findings in the affected knee suggested the advisability of examining other joints with the Roentgen ray. The right knee was found to have practically the same appearance as the left, and a roentgenogram of the wrist joints showed that the boy's ossification development was retarded about three to four years (Fig. 2).

The diagnosis of traumatic arthritis and epiphysitis associated with retarded ossification was made, and the parents were advised to keep the boy quiet and not let him play so actively with boys of his own age. Syrup of ferrous iodid was advised as a tonic.

The boy was seen and examined again six months later. He had had one or two slight attacks of his old trouble in the left knee, but at the time of the examination there was no evidence of arthritis anywhere.

I have recently seen and examined the boy again, nearly two years since the original examination. He has been free from arthritis with the exception of an attack in the instep four or five weeks ago. This attack kept him from school two or three days. He has to take a long walk to school and plays vigorously with boys of his own age, from 10 to 11. His mother says he gets very tired and does not sleep well at night, but always recovers quickly when he rests.

Roentgenograms at present show that the irregular ossification in the patella and epiphysis of the tibia has disappeared; but the general ossification development, as shown by the wrists, is still retarded from two to three years.

CASE 2.—A boy, aged 7 years and 10 months, complained of pain and swelling in the left knee and right ankle. He was referred to me for Roentgen-ray diagnosis, and I am indebted to his attending physician for the history. The family history was negative. The boy never seemed strong for his weight and age, but always very active. Otherwise the past history was negative. The present illness began about a year and a half ago with pain and swelling in the knee. The condition present at that time was so strongly suggestive of tuberculosis that the patient had been treated by a plaster-of-Paris cast.

A roentgenogram of the left knee was taken with the idea of showing the location and extent of the tuberculous process. No evidence of any tuberculous process was found, however, but the appearance of the joint (Fig. 1) was so similar to that in Case 1 that a common cause was suspected. A roentgenogram of the wrist joints was taken, and ossification was found to be retarded about four years.

The diagnosis of traumatic arthritis and epiphysitis associated with retarded ossification was made; the activities of the boy were restricted, and the arthritis cleared up.

I was able to examine this patient nine months later. At that time there was no external evidence of arthritis, but roentgenograms showed that there was still some irregular ossification in the knee joint, and that ossification was still retarded about four years.

CASE 3.—A boy, aged 10, complained of pain in the right heel. The family history was negative. The boy had always been well, but rather pale and delicate looking. He had sprained the right ankle two years before, and thought that the foot had never been right since. He had had pain in the right heel for the past two weeks. He would wake up in the night crying with pain in the heel. The patient's mother said that the heel throbbed at such times. Walking was painful.

The heel was tender to the touch near the insertion of the Achilles tendon. The von Pirquet test was negative. A roentgenogram of the ankle was negative except that the epiphysis of the os calcis was not so well developed as it should be in a boy 10 years old (Fig. 3). A roentgenogram of the wrist joints showed that the ossification development was delayed between two and four years.

Fig. 3.—On left, small and irregular ossification of the epiphysis of the os calcis in Case 3, a boy aged 10. On right, ossification in the epiphysis of the os calcis in a girl aged 10.

The symptoms rapidly cleared up under adhesive strapping applied to the heel, and restricted activity.

The cases show that retarded ossification may be an etiologic factor in the production of traumatic arthritis and epiphysitis in children. The trauma, in such cases, consists in overstrain of the joints due to abnormal activity. The child may be leading the normal active life of a child of his own age, but anatomically he belongs to a type several years younger and, to avoid strain, his activities should be correspondingly restricted. Cases of this character are probably quite common, and are very apt to be overlooked or wrongly diagnosed.

THE STANDARDIZATION OF DIGITALIS AND THE POTENCY OF AMERICAN-GROWN DIGITALIS *

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This study was undertaken by us, at the suggestion of Dr. Janeway, in the endeavor to insure digitalis preparations of maximum and known effectiveness for use in the wards. These desiderata are so rarely fulfilled in any hospital that the results we have obtained seem worthy of a brief report.

METHODS OF STANDARDIZATION

Two methods of biologically standardizing digitalis preparations are commonly employed: the so-called "frog" method, and the so-called "cat" method. After a number of preliminary experiments it was found that the frog method was less reliable for the standardization of the infusion than the cat method[1]: the latter method was therefore exclusively employed in this work. The technic followed by us was suggested by Hatcher and Brody,[2] and is somewhat similar to that described by them, and consisted in determining the minimal fatal dose per kilogram weight of cat, the drug being injected slowly into the femoral vein. Our procedure was briefly as follows:

A healthy cat was anesthetized with ether, and a cannula inserted into a femoral vein, subsequently a minimum amount of ether being administered, just sufficient to keep the animal quiet. Ten c.c. of the infusion of digitalis were slowly injected into the vein in the course of five minutes, and thereafter 1 c.c. every two minutes until the death of the animal. The total amount of the drug injected divided by the weight of the animal gave the strength of the preparation in terms of so-called "cat units." The following protocol will serve as an illustration:

Experiment, April 30, 1915. Cat weighing 2.6 kg. Cannula in left femoral vein, light ether anesthesia.

3:20 p. m. experiment begins. Pulse 160 per min.

Slow injection of infusion digitalis.

3:25	Finished injection of 10 c.c.	Pulse 140	per minute
3:27	Injected 1 c.c.	Pulse 120	
3:29	Injected 1 c.c.	Pulse 100	
3:31	Injected 1 c.c.	Pulse 72	respirations rapid
3:33	Injected 1 c.c.	Pulse 72	vomits
3:35	Injected 1 c.c.	Pulse 72	
3:37	Injected 1 c.c.	Pulse 60	
3:39	Injected 1 c.c.	Pulse 148	
3:41	Injected 1 c.c.	Pulse 160	
3:43	Injected 1 c.c.	Pulse 160	
3:45	Injected 1 c.c.	Pulse 180	
3:47	Injected 1 c.c.	Pulse 168	
3:49	Injected 1 c.c.	Pulse 240	
3:51	Injected 1 c.c.	Pulse 240	
3:53	Injected 1 c.c.	Pulse 240	
3:55	Injected 1 c.c.	Pulse irregular, very rapid	
3:57	Injected 1 c.c.	Pulse irregular, very rapid	
3:59	Injected 1 c.c.	Pulse dead: heart in systole	

Total amount of infusion = 26 c.c.
Therefore lethal dose = 26

2.6 = 10 c.c. per kg.

By this method different infusions of digitalis prepared from two batches of Allen's English leaves were assayed: the one from the stock of the pharmacy of the Johns Hopkins Hospital, the other an infusion procured from a well-known pharmacy in New York. The lethal dose of the former was found to be 13.5 c.c. per kilogram; that of the latter, 7.5 c.c. per kilogram. This difference in potency could be accounted for only in two ways: either by differences in the method of preparation or by variations in the intrinsic quality of the leaves.

DIFFERENCES IN POTENCY DUE TO METHOD OF PREPARATION

A comparison was made between a New York infusion of digitalis and an infusion from the same stock of leaves prepared by our own pharmacist. The lethal dose of the New York preparation was 6.6 c.c. per kilogram. The lethal dose of our own infusion from the same leaves was 9 c.c. per kilogram. Four days later the same preparations, having been kept on ice, were restandardized, and gave the lethal doses of 6.8 c.c. and 9 c.c. per kilogram, respectively, showing that the preparation did not deteriorate rapidly on standing, a fact which has been pointed out recently by Hatcher.

These figures indicated clearly a difference in potency due to the method of preparation. The New York technic for preparing the infusion was then ascertained[3] and applied to our own stock of English leaves. The lethal dose of this infusion was found to be 11.1 c.c. per kilogram of cat. An infusion made from the same leaves by the method formerly employed by our pharmacist gave a lethal dosage of 13.5 c.c.

In order to ascertain still further how great a difference in potency of infusions may result from variations in the methods of preparing them, our pharmacist, Dr. Wahl, prepared three infusions from the same lot of Allen's English leaves, by slightly different pharmaceutic methods. Infusion 1 was prepared according to the U. S. Pharmacopeia.[4] Infusion 2 was made by macerating the leaves with water plus 10 per cent. dilute alcohol, instead of adding the alcohol to the finished product as directed in the U. S. Pharmacopeia. Infusion 3 was prepared by macerating the leaves with boiling water in a closed flask, and gently beating the contents of the flask during the whole process of extraction. The lethal dose of Infusion 1 was found to be 11.4 c.c., that of Infusion 2, 9.5 c.c., and that of Infusion 3, 10.6 c.c. per kilogram weight of cat. Thus it will be seen that a considerable variation in the potency of an infusion of digitalis may result from differences in methods of preparation.

VARIATIONS DUE TO THE SOURCE OF THE LEAVES

The difference in the potency between the New York infusion and our infusions just described could not be entirely explained by variations in the method of preparation, but were also obviously due to differences in the inherent qualities of the leaves used. The next step in the investigation was therefore to assay infusions of digitalis prepared by a uniform method from various lots of digitalis leaves obtained from various sources. Great variations in the strength of the products were noted.

It was found that an infusion prepared according to the U. S. Pharmacopeia from our stock of English

* From the Medical Clinic of the Johns Hopkins Hospital, and Pharmacological Laboratory of the Johns Hopkins University.

1. It is advisable to make three toxicity experiments with each preparation and to take the average. As a rule wide variations are not encountered.

2. Hatcher and Brody: Am. Jour. Pharm., 1910, lxxxii, 360.

3. The method of preparing the infusion employed at Johns Hopkins is the official method of the U. S. P. The New York technic differed from this in some details which need not be gone into in this place.

4. Although the U. S. P. gives specific direction for preparing the infusion of digitalis, we have good reason to believe that those directions are not always followed. Compare Alpers: Jour. of Am. Pharmaceut. Assn., June, 1915, p. 715.

leaves yielded a product with the lethal dose of 13.5 c.c. That of an infusion from another lot of English leaves was found to be 9.6 c.c., while still another lot of English leaves yielded an infusion, the lethal dose of which was 8.7 c.c. per kilogram. An infusion prepared from some German digitalis leaves found in the hospital pharmacy proved very inferior in quality, giving a lethal dose of 19 c.c. per kilogram weight.

POTENCY OF AMERICAN LEAVES

It was especially interesting to find that certain American grown digitalis leaves yielded a product of a very high quality. Two lots of American leaves were assayed by us. One was a supply of Wisconsin leaves kindly presented by Dr. George B. Roth of the Hygienic Laboratory in Washington. The second was obtained from Dr. E. Kremers of the Pharmaceutical Experiment Station, University of Wisconsin. The first yielded an infusion with a lethal dose of 7.6 c.c., and the second an infusion with a potency of 7.8 c.c. per kilogram weight of cat. It is evident that both infusions made from the American grown leaves were superior in potency to those made from our stock English and German leaves, and in fact superior to all other leaves assayed by us. We have in America, therefore, a digitalis which is unsurpassed. Through the kindness of Dr. Kremers a supply of Wisconsin leaves was secured and is now being used exclusively in the wards of the Johns Hopkins Hospital.

THE MORAL

These investigations strikingly emphasize the need of standardization of digitalis. Variations in lethal dose from 6.6 to 19 c.c. per kilogram weight — approximately 300 per cent. — were found in infusions prepared from these various leaves. Certainly this is greater than should be tolerated by the profession. Yet in all probability still greater variations exist in leaves purchased in the open market.

Standardization reveals the strength of the digitalis preparation and permits of graded dosage — more or less — according to the potency of the preparation. The physician's duty to his patient does not end with the prescribing of digitalis. Plainly it is incumbent on him to secure digitalis effects if the case is a suitable one. This is more likely to be accomplished if the potency of the preparation is known.

We are also brought face to face with another fact, that the name of this or that firm does not always insure potency or digitalis effect. As we have shown, American leaves can be secured which are unsurpassed. The answer to the question of potency is to be found in standardization, which is essential to the best treatment.

A NEW HEMORRHOIDAL OPERATION: THE SNARE AND BULLET*

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The hemorrhoidal operation here described is simple, rapid, free of danger, suitable for the use of local anesthesia and has been used by us in a series of sixty cases. "Pile" operations are notoriously varied. The clamp and cautery, clamp and suture, the ligature with or without suturing of the cut mucosa, the Whitehead operation, plastic procedures, submucous excision of the varicosed veins, and injection of irritants into the "pile" mass are favored by different authorities, but during the past year we have discarded other technic for our own. In 95 per cent. of rectal operations and in all cases of hemorrhoids we use local anesthesia, which is very satisfactory for the method to be described; moreover, with the avoidance of ether or chloroform, the cause of much dread and delay by the patient will be obviated. Local anesthesia demands moderate celerity in operating, for, although pain is avoidable, the nervousness of many patients makes prolonged procedures undesirable. A good assistant will add much to the ease with which an operation is performed, and the same preparation and aftercare of the patient should be given as would have been demanded had general anesthesia been used.

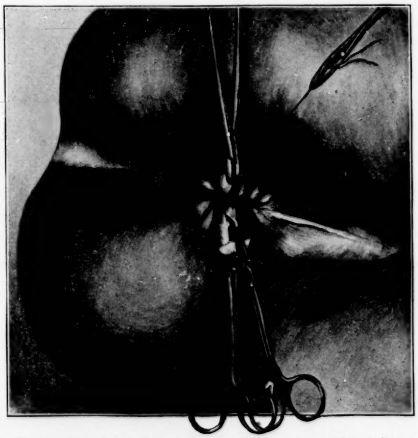

Fig. 1.—Method of closing down on loop, after which bullet is crushed and hemorrhoid distal to snare cut away.

The method advocated by us may be designated "the snare and bullet operation for hemorrhoids." The instruments required are a hypodermic syringe and local anesthetic, half a dozen artery forceps, two pairs of scissors, one pair for cutting the wire, four or five strands of strong pliable wire, both ends of each strand threaded through a perforated lead bullet, and a bullet holder and crusher. The operation resembles most the ligature method, but is more thorough, cleaner and more quickly carried out than the latter. The pile can be cut away closer to the snare than to the ligature, and the snare and bullet finally lie at a higher level than does the ligature, which the fingers must get into the anal canal to tie, a procedure that is difficult. With the ordinary ligature, hemorrhage may follow if it is tied loosely, or polyplike masses may persist as a result of incomplete cutting off of the blood supply of the hemorrhoidal pedicle. With the snare and bullet technic, no fear of a slipping ligature exists, and as a consequence of complete removal of the "pile"

*Read before the Westchester County Medical Society at St. Joseph's Hospital, Yonkers, N. Y., Jan. 18, 1916.

mass, a clean surface is left to heal without gangrene and infection, while convalescence is shortened.

The application of the snare and bullet will follow a routine technic. The tissues to be removed are thoroughly anesthetized with the local anesthetic fluid, and an incision is then made below and to either side

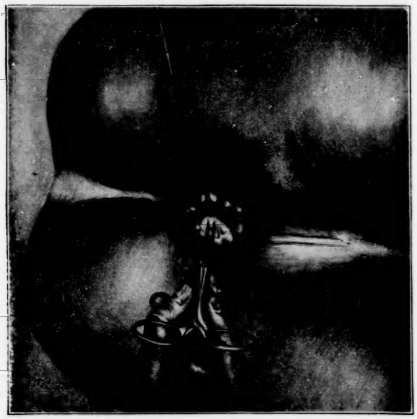

Fig. 2.—Hemorrhoid with prolapse; suture in place preparatory to drawing the wires taut.

of the extro-internal hemorrhoid, extending into the rectum, and dividing the deeper tissues in somewhat the form of a V wedge. A pair of forceps, previously applied to the tissues to be removed, is now

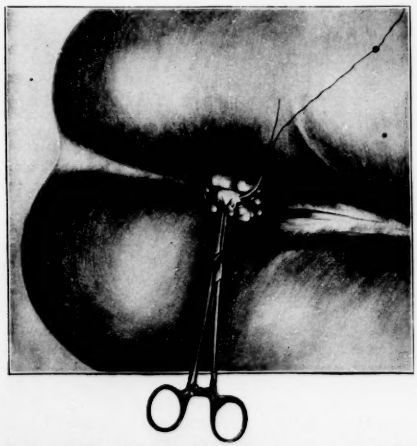

Fig. 3.—Method of inserting anchor stitch in cases of hemorrhoids associated with prolapsed mucosa.

used to exert gentle traction on the parts exposing more of the rectal mucosa proper. A second pair of forceps is then placed on the rectal mucosa, and again traction on the mass is made, and the lateral incisions are then extended inward to the degree desired. Above the last pair of forceps placed a transverse incision is made in the mucous membrane, a point of some importance since it is in this slit that the wire will sink and slipping of it be prevented. A wire loop, threaded through the perforated bullet, and its free ends held in a clamp, is then slipped over the handles of the forceps attached to the hemorrhoid, and the loop placed in position with the forefinger. While the wire loop is kept taut, the bullet is grasped by the bullet holder and crusher and forced down on the mucosa, to either the skin or mucosa side of the pedicle, preferably the latter, thus tightening the snare. The bullet forceps are then closed with pressure and the lead bullet made to collapse on and hold the taut wires where they pass through it, securing the snare in proper position. Excess of the pedicle is cut away, and then the wires are severed flush with the bullet.

When extensive prolapse of the rectal mucosa accompanies the hemorrhoids, the technic is somewhat changed. The "pile" mass is freed in the same manner, but the wire, threaded on a curved needle, passes

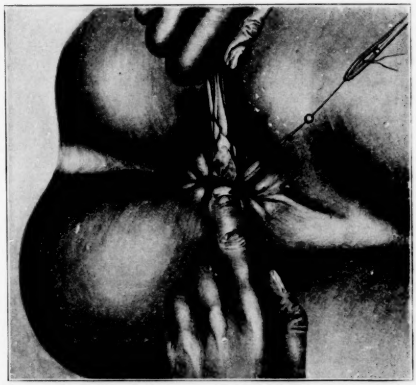

Fig. 4.—Placing snare in position with forefinger.

first transversely through the rectal mucosa above the corresponding hemorrhoidal area. One half of the wire is already threaded through a perforated bullet; the other then encircles the "pile" pedicle, as shown in illustration, and passes through the same bullet. The mucosa is incised superficially, so that the wire will become embedded when tightened, and the hemorrhoid is cut away. Others present are removed in the same manner, usually three in all, and a small gauze drain is placed in the rectum. Most of these patients are operated on in the office; but if coming from a distance, or if the condition is complicated with bowel prolapse, they remain in the hospital from twenty-four to thirty-six hours.

Voluntary urination is always possible following the proper performance of this operation, in contrast to the usual hemorrhoidectomy, after which catheterization is generally required. Provided the bowels have been thoroughly evacuated the day preceding operation, it is desirable that bowel movements be avoided for two or three days. To obtain this object, dependence is placed on a light diet, previous catharsis and,

in selected cases, one-half grain of opium twice during the day and the day following operation. Until a satisfactory bowel movement is obtained, preferably without catharsis apart from liquid petrolatum given in ounce doses at night, beginning the second or third day after operation, a selected diet, one leaving but little residue, is indicated. It is not necessary to pack the rectum or to insert plugs, which cause discomfort while in place and pain on removal. Sutures are not used, but healing takes place by granulation and secondary union. Repair is complete in from two to three weeks. The snare and bullet may come off the fourth day, but usually the fifth or sixth.

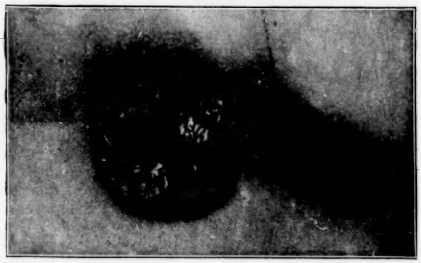

Fig. 5.—Hemorrhoids and prolapse in which operation was performed by snare and bullet, Dec. 13, 1915.

As often performed, hemorrhoidal operations are unsatisfactory, failing in their object or actually causing complications, such as anal constriction, everted mucosa, incontinence, secondary hemorrhage, pain, infection and delayed healing. By means of the snare and bullet method, such results will be less liable to occur, and a satisfactory hemorrhoidectomy technic is acquired.

Fig. 6.—Result of operation in case illustrated in Fig. 5, Jan. 13, 1916. The case remained an ambulatory one.

17 East Thirty-Eighth Street.

Neglect of Health.—In these days, half our diseases come from the neglect of the body in the overwork of the brain. In this railway age, the wear and tear of labor and intellect go on without pause or self-pity. We live longer than our forefathers, but we suffer more from a thousand artificial anxieties and cares. They fatigued only the muscles, we exhaust the finer strength of the nerves.—Bulwer.

THE PRACTICAL APPLICATION OF BLOOD PRESSURE FINDINGS

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Blood pressure readings, as often made, are practically worthless. Almost invariably, when necessity has demanded an inquiry as to the blood pressure, the answer has been that "it" is in the neighborhood of 140, 150, 180 or 200 mm. of mercury. This, of course, refers only to the systolic pressure, the one of least importance of the entire four readings, the only one taken, and as a rule not recorded. Frequently, even the systolic pressure findings are incorrectly taken as, for instance, when the compression bag of the instrument is placed about the arm over the sleeves. It seems hardly possible, in view of the principles involved in the operation of the instrument, that such a stupid mistake could be made, but I have been an eye witness of this very performance on more than one occasion.

After seeing this done a number of times by men of good training, I determined to make a series of experimental observations, to ascertain the increase of pressure required to obliterate the vessel with the bag over the sleeve of a garment. Twenty-five examinations were made, the compression bag first over the sleeve and then over the bare arm as a control. In every case, it was as one would expect it to be, the mercury column registering a systolic pressure of from 10 to 30 mm. of mercury higher than on the bare arm. The material of which the sleeve was made influenced, of course, the amount of the increase of pressure. The dire results of a mistake of this kind may well be imagined.

Another source of error, or rather inaccuracy, is the use of the palpation method of estimating pressures. In a series of 100 experimental examinations recently made, with the sole purpose of determining the variations, if any, in the readings obtained by the palpation method and the auscultation method, the column invariably stood from 5 to 10 mm. higher with the stethoscope than with the tips of the fingers. The systolic pressure alone was investigated in these experiments, but the same thing holds good for diastolic findings. The pressure pulse and mean pressure are influenced in directly the same proportion.

This paper is based on the results obtained in 500 recorded findings from a series of examinations made during the last two years. As I said before, the systolic pressure findings are of much less importance than either the diastolic or pressure pulse records. The systolic pressure is the final result, the sum total of all the influences operating to obstruct the blood stream. In other words, it is the resistance offered by the vessel walls, plus the power of the left ventricle, plus the influence of the vasomotor system of circulatory control.

Generally speaking, its only real value is in those cases in which the diastolic pressure is known to be high, as in the course of a chronic interstitial nephritis, especially after arterial degenerative changes have occurred, and as an index to the probable condition of the diastolic pressure and the pressure pulse, or as an aid in arriving at a prognosis. Its diagnostic value is practically nil.

A homely example of the mechanism of blood pressures, or more correctly, a homely comparison, is seen

in the operation of the fire engine and fire hose, minus, however, a very important function, that of anything to represent the all important action of the vasomotors, the dilators and constrictors. The hose represents the arterial tree; the tension in the air chamber of the engine at the beginning of each stroke of the pump represents the diastolic pressure; the additional force exerted on the column of water at the end of the stroke of the pump represents the pressure pulse, and the sum total of all pressures exerted at the nozzle represents the systolic pressure. It can be readily seen that, while the force of water at the nozzle is all important so far as the fire is concerned, there will be no water to throw on the blaze if, perchance, the compression in the air chamber is inefficient, or the general tone or condition of the hose insufficient to conduct the column of water along to the nozzle and maintain it at the pressure imparted to it by the pumps. The important things are, therefore, the state of efficiency of the pumps and the ability of the hose to maintain the column of water at the requisite pressure, the condition of efficiency of the heart and blood vessels. The comparison is crude indeed when compared to the wonderful mechanism of the circulatory system, but it will serve to illustrate my meaning when I say that the systolic pressure readings are, as a rule, practically worthless, when not taken in conjunction with the other pressure findings.

DIASTOLIC PRESSURE

The diastolic pressure, on the other hand, is of the greatest importance, not only as an aid to diagnosis, but also as a prophetic index in arriving at a prognosis. To obtain diastolic records of any diagnostic value, it is absolutely essential that several examinations be made under different conditions as to time, environment, emotion, exercise, diet and medication. When this is carried out, the average record will give reliable information as to the condition of the vessels, at least beneath the arm band. It is well to direct the attention to the fact that the conditions found in the arteries immediately beneath the compression bag are not necessarily or invariably those to be found in other parts of the circulatory system. Among causes which might operate to produce different readings in the two arms, for instance, is a possible variation in the size of the vessels or a possible difference in the level at which they lie imbedded in the muscles.

The smaller a vessel is, and the greater the distance it lies from the surface, the greater is the compression likely to be required to obliterate it. That this is sometimes the case is well illustrated in one of my own patients. The diastolic pressure in the right arm invariably registers a full 5 mm. more than in the left arm, and being aware of this fact, I always take my readings from the right arm. The condition of the vessels beneath the arm band is, as a rule, a reliable index as to the condition of the vessels in general, especially in the young and middle aged; but that it is not always so I have found on several occasions, to my own discomfiture. It is not uncommon for persons with apparently soft and pliable radial arteries to suffer a cerebral hemorrhage; and, on the contrary, aged men and women are seen with hard, sclerosed, pipe-stemlike arteries who live to a great age, and die of anything rather than apoplexy. It means, of course, that the condition of the circulatory system is not necessarily everywhere the same.

A diastolic reading of 100 mm. or more usually means that there is a narrowing of the lumen of the vessels, due to a stimulation of the vasomotor constrictors; but I am convinced that it may mean the existence of a true arterial fibrosis. I am aware that it is generally agreed that an atheroma causes a reduction in diastolic blood pressure, or, at least, the pressure is increased little, if any. On the other hand, I have under my care several patients with arteriosclerosis, of a syphilitic origin, with an abnormally high diastolic pressure. The importance of determining the cause of high diastolic pressure is self evident; a hard diseased vessel wall means a serious pathologic condition, while an increase in diastolic pressure, due to increased activity of the vasomotor constrictors, is likely to be functional.

How can we distinguish between the causes of high diastolic pressure? The means employed are simple and easy of accomplishment. Herein lies one of the reasons for my statement that a single pressure reading is liable to be a source of error. Supposing a patient presents himself with a high pressure pulse, with a feeling of oppression in the precordial region, with attacks of dizziness, or a feeling of extreme weakness and lassitude, and possibly dyspnea. For example, suppose the patient is a woman whose husband is a victim of an arterial fibrosis, and, in order to extend the example, the husband has been the subject of apoplexy. After an ordinary examination, no organic trouble is found, but the sphygmomanometer registers the following blood pressures: systolic, 210 mm.; diastolic, 105 mm.; pressure pulse, 105 mm., and a mean pressure of 152.5 mm. Here we have a high systolic pressure, but we also have a high diastolic pressure, and the high systolic pressure cannot be due entirely to an increase of the pressure pulse alone. While the pressure pulse of 105 mm. is abnormally high, a diastolic pressure of 105 mm. makes it at least possible that it is due to the increased labor required of the heart, in propelling the blood stream through a rigid arterial system. The conclusion which would naturally be drawn is that an arteriosclerosis exists. But suppose that, on the following day, the systolic reading is 180 mm. and the diastolic reading is 90 mm., and on the third day it is down to 150 and 80 mm., and that from week to week, the readings vary; first high then low. One would, I am sure, change one's ideas about the existence of an arterial fibrosis. No true atheroma will flirt with the instrument in any such manner as this. Had the first blood pressure examination been depended on, not only would a wrong diagnosis have been made, fraught with dire possibilities to the patient and damaging to one's professional reputation, but also one would have rendered oneself liable to a malpractice suit. In this case, the cause of all the symptoms is a spasm of the vasomotor system, due to a stimulation of the constrictors, and the etiologic factors must be traced through the central nervous system to their source. That such mistakes occur, and not alone by small town doctors, I have reason to know. On the other hand, if the diastolic pressure remains rather constant, with little variation from day to day, except under the influence of powerful vasomotor dilators, such as the nitrites, and, even with them, the variation is not nearly so great, and one is justified in concluding that the vessel walls themselves are the culprits.

PRESSURE PULSE

The pressure pulse is so immediately important that life itself depends on it. In diseased states of the body, and especially in acute troubles, its value in indi-

cating the course of the disease cannot be overestimated. The pressure pulse is the effect rather than the cause, for a failing pressure pulse can be measured, and indicates before other physical signs that the patient is doing badly, or is improving. Its value is great in drug therapy, for a high pressure pulse usually contraindicates drugs of the digitalis, strychnin, caffein or camphor class, while a low pressure is a sure indication that drugs of the aconite, belladonna or veratrum viride class will harm the patient. It will tell in unmistakable terms what effect, if any, the treatment is having. The so-called athletic heart, the tired heart, the hypertrophied heart and the nervous heart will all be revealed in a study of the pressure pulse, taken in conjunction with the other physical findings. It accounts for a large number of high systolic pressures, which otherwise might be laid at the door of an atheroma.

As the systolic approaches the diastolic pressure, the pressure pulse naturally becomes less and less, and death supervenes when they become the same. A negative pressure pulse is inconsistent with physical life. As the pressure pulse is nothing more than the reserve force of the heart measured in millimeters, the daily use of the sphygmomanometer, particularly in the treatment of acute diseases, is indispensable, and is the most reliable means at our command for judging the efficacy of the measures employed and in forming the prognosis.

Consider, for example, in a case of pneumonia, when the question of bleeding, or the administration of digitalis or veratrum viride arises, what an aid the knowledge of the reserve heart power would be. Or in the case of a weak, flabby heart, with a tendency to dilate, and a variable high diastolic pressure, what an inexpressible aid it would be to determine that the high pressure is a compensatory move to relieve the work of a weak organ. It is much easier, everything else being equal, to fill a tube one-sixteenth of an inch in diameter than one one-eighth inch in diameter, and Nature, knowing well how true this is, attempts to reduce the volume of space to be filled, by contracting the vascular system, through the agency of the vasomotor constrictors. Herein lies one of the principal reasons against indiscriminate use of vasomotor dilators, such as sodium nitrite, in every case of high diastolic pressure.

Unless the diagnosis is correctly made, one is liable to combat the very means Nature knows to be needed in her efforts at repair. The nitrites are as likely to be contraindicated as indicated in any case of high diastolic pressure, especially if the high systolic pressure alone is considered, for a high systolic pressure is as likely to be due to a pressure pulse abnormally high as anything else. I have frequently seen a systolic pressure of 200 mm. or more, and a diastolic pressure as low as 90 mm. in persons over 50 years of age. In such cases, the cause of the violent heart action would have to be investigated, rather than efforts made to reduce pressure through the arterial system itself. Drugs of the nitrite class influence mainly the vessel walls, as is represented by the feeling of fulness in the head when amyl nitrite is inhaled, and are contraindicated when the power of the heart is to be conserved. In the light of our present knowledge of blood pressures, scientific medicine is practiced only when they are intelligently studied and considered in connection with each case that presents itself.

MEAN PRESSURE

The diastolic pressure plus half the pressure pulse must, of course, be the mean pressure, and is of value chiefly in recording the findings and keeping track of the general progress of the case. It has no particular prognostic or diagnostic value, but is used mostly to record the general condition of the patient for future reference. A diastolic pressure of 80 mm. and a systolic pressure of 120 mm. would mean a pressure pulse of the difference, or 40 mm., the three most important readings. Now the general or average or mean pressure would be the diastolic pressure, 80 mm., plus half of 40, or 20 mm., making a mean pressure of 100 mm., a normal pressure for a person from 20 to 30 years of age. In the beginning of this paper, I state that the systolic is the least important of any of the readings. This is not exactly true. It is at least more immediately important and valuable than the mean, but there can be no comparison between the relative values of it and either the diastolic pressure or the pressure pulse.

I have considered only briefly some of the features of blood pressure findings which appear to me to be, at least in this particular locality, the most important. I have the records, in tabulated form and according to age, of 500 examinations made during the last two years, but for the sake of brevity I will give the general averages for periods of ten years each, ranging from the age of 20 years to that of 60 years, including those apparently well and otherwise.

AVERAGE BLOOD PRESSURES

Age, Years	Number of Examinations	Blood Pressure, mm. Diastolic	Systolic	Pressure Pulse
From 20 to 30.....	50	81	125	44
From 30 to 40.....	72	86	142	55
From 40 to 50.....	210	89	156	61
From 50 to 60.....	168	88	183	94

A considerable proportion of the readings were made from patients with abnormally high pressures. It is my intention, in a subsequent paper, to tabulate the results according to age, occupation and condition of health. Syphilis, alcohol, tobacco, in the order named, have played an important part in the production of permanent high diastolic pressures in these cases, while certain occupations requiring long continued mental concentration, especially if associated with the excessive use of tobacco, have seemed to operate mainly in the production of high systolic pressures, due principally to excessive heart action — abnormally high pressure pulse.

Violent physical exercise produces high systolic pressure by means of cardiac hypertrophy. Speaking generally, I would say that at the age of 40 years, the only safe procedure for the individual is to have pressure examinations made every three months, and from 60 years and up, every month. Thus, in a majority of instances, a beginning dangerously high pressure due to a true arterial fibrosis or an incipient nephritis would be detected.

A word regarding what I believe to be the correct method of estimating blood pressures does not seem out of place. If possible, I have the patient lie flat on the back with the arm in supination; if this is not convenient, I have them sit quietly in a chair by a table, just sufficiently high to rest their elbows on it without raising the shoulders. The entire arm is slipped out of the clothing, and the compression bag is placed about the arm at the level of the heart. In order to quiet the nervousness which is likely to result from the proceedings, I talk to them quietly of other things, or occupy

myself with other things, for a few minutes. If the necessary manipulations in applying the instrument cause a rise in pulse beat, it is useless to proceed with the examination until the pulse rate falls to its normal level under the conditions.

When everything is ready, I place the bell of the stethoscope over the brachial artery at its bifurcation into the ulna and radial. Some slight pressure is required to hold the bell in place and to do away with the sound of friction between the skin and the instrument. The bag is then gradually inflated until the compression is just sufficient to overcome the resistance of the arterial wall. At this point the wall begins to give under the compression, and the linear contour of the wall is slightly changed. Now a faint thump is heard. The position of the mercurial column is noted and remembered. The reading immediately beneath the point at which the first faint thump is heard is the diastolic pressure. The bag is now rapidly inflated, and I listen meanwhile to the increasing and then decreasing sounds until they finally cease. At this point, the opposite walls of the vessels are in close contact and the flow of blood is interrupted. Now the mercurial column is run up a few millimeters more, and then the air allowed to escape from the compression bag very slowly. At the point, minus a millimeter, where the first faint thump is again heard, coming down, is the systolic pressure. The air is then allowed to escape rapidly until the thumping begins to grow faint again, when the air is released very slowly to the position where the last thump, coming down, is again heard. This again, plus 1 mm., is the diastolic pressure. The systolic minus the diastolic reading is the pressure pulse. Every reading is recorded to compare with the previous readings. By this means, the two pressures are obtained going up the scale and verified coming down the scale. The process is repeated on the other arm. One should be governed by the arm showing the highest readings. Compression should not be made for a longer period than a minute and a half to two minutes, which is long enough for making the readings.

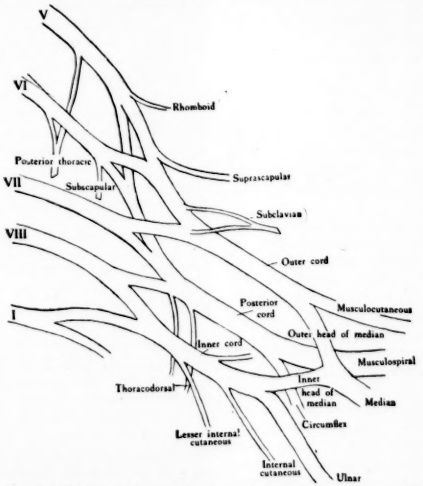

Fig. 1.—The normal brachial plexus (diagrammatic) with its five nerve roots (V, VI, VII, VIII cervical, and I dorsal) forming the three cords, which subdivide into six main brachial nerves. The suprascapular nerve is a most important branch and its impairment characterizes the deformity.

The Social Worker.—A promoter of social well-being ought to be actuated by the principles, and be governed by the motives, of a scientist. He should be thoroughly cognizant of those factors in human life which make or mar it; which build up or destroy cities, states and nations. His field of vision must include the unborn generations, and his sympathy must not be moved by the physical stimuli of the moment alone, but must be broad enough to comprehend the eternal impulses of mankind.—Harry H. Howett, *Ohio Bull. of Charities and Corrections.*

THE OPERATIVE TREATMENT OF BRACHIAL PLEXUS PARALYSIS

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Injuries to the brachial plexus are common, especially at birth; for this reason the term "brachial birth palsy" is frequently used. The prolonged forcible separation of the head from the shoulder by lateral extension during difficult labor is, in my opinion, the most frequent cause of this distressing condition. In my series of fifty-six cases with operation, it has been difficult to ascertain whether the head was pulled upward to assist the after-coming shoulder to emerge over the perineum, or was pushed downward to allow the shoulder to slide beneath the symphysis, or whether, in breech presentations, the trunk and shoulder were pulled upward or pushed downward to aid in extricating the head. It has also been hard to ascertain accurately whether there was much difficulty in freeing the after-coming arm, and whether or not the obstetrician was compelled to hook his fingers in the axilla or over the clavicle. These data are frequently overlooked in the excitement of a difficult labor, and when the paralysis of one arm is observed later, the definite cause of it can be only conjectured. The frequency of birth palsy of the right arm, with the usual occiput left anterior position of the head, would point to the perineum as being the obstruction to the delivery of the right shoulder and arm; in 70 per cent. of the fifty-six cases with operation, the paralysis was of the right arm, and in 28 per cent., of the left arm; 78 per cent. followed head presentations, while 22 per cent. were the result of breech presentations.

In adults, the usual cause of brachial paralysis is a fall on the shoulder, forcibly separating it from the head, and in this manner the plexus is suddenly stretched until its nerve roots are damaged and even ruptured. Direct blows over the lateral base of the neck at the upper portion of the supraclavicular space may also injure the brachial plexus. However, the condition occurring in adults is comparatively rare; besides, it is limited usually to the upper arm type of palsy, and is fortunately in many cases of only temporary duration, that is, merely a nerve stretching, so that the paralysis disappears, under appropriate treatment, within three months.

ANATOMIC CONSIDERATIONS

The brachial plexus, besides being comparatively superficial, is neither covered by any important struc-

tures in the neck, nor in close relation to them, and it can therefore be exposed easily and safely.

It is formed primarily by the fifth, sixth, seventh and eighth cervical and first dorsal nerve roots. The fifth and sixth nerve roots unite and form, together with a branch from the seventh root, the outer cord of the plexus — the origin of the outer head of the median nerve and the musculocutaneous nerve; the seventh, with a branch from the fifth and sixth and also one from the eighth nerve roots, forms the posterior cord of the plexus — the origin of the circumflex and musculospiral nerves, while the eighth cervical and the first dorsal roots form the inner cord of the plexus — the origin of the inner head of the median nerve, the ulnar and the internal cutaneous nerves. A very important nerve, and one most constantly involved in lesions of the brachial plexus, is the suprascapular nerve; it arises from the outer side of the fifth root or just below the junction of the fifth and sixth nerve roots, and by a rather tortuous course supplies chiefly the external rotators of the upper arm, allowing the characteristic internal anterior rotation of the arm in the brachial plexus lesions. Several small nerve branches arise from the plexus; the fifth sends a branch to the phrenic nerve (chiefly formed from the fourth cervical nerve root) and one to form the posterior thoracic nerve (the external respiratory nerve of Bell) with a branch from the sixth and seventh root; the rhomboid nerve also arises from the fifth nerve root, while the nerve to the subclavius muscle and the anterior thoracic nerves arises from below the junction of the fifth and sixth roots. The subscapular and thoracodorsal nerves arise from the seventh root, while from the union of the eighth cervical and first dorsal roots arise the lesser internal cutaneous nerve and a branch to the intercostohumeral nerve.

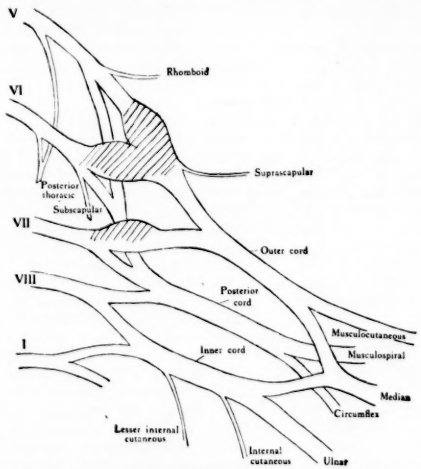

Fig. 2.—The lesions producing the most common form of brachial paralysis — the upper arm type of birth palsy (Erb's paralysis). The site of the tear is at or just above the emergence of the suprascapular nerve, the function of which is therefore impaired in almost all of the patients. Connective fibrous tissue (the shaded areas) may impair the lower nerves of the plexus in varying degree.

The plexus lies directly beneath the deep cervical fascia and on the scalenus muscles at the outer border of the scalenus anticus muscle; the fifth and sixth nerve roots emerge obliquely between the scalenus anticus and medius muscles, the seventh root about 2 centimeters below and almost horizontally, while the eighth cervical and first dorsal roots appear more posteriorly behind the scalenus anticus muscle, where they unite to form the inner cord of the plexus. The cords of the plexus extend outward and downward; they divide to form their respective nerves in definite relations to the subclavian and axillary vessels, the upper portion being above and behind the third part of the subclavian artery, while the lower portion is on the acromial side of the axillary vessels and enclosed in the axillary sheath.

It is interesting from a morphologic standpoint to note that each primary nerve root divides into a ventral and a posterior portion — the ventral division sending a branch to either the outer or inner cord of the plexus, thus supplying the ventral cutaneous areas and ventral muscular groups of the arm, whereas the posterior divisions form the posterior cord of the plexus, and supply the posterior or dorsal cutaneous areas and posterior muscular groups of the arm. Thus, we have the deltoid, biceps brachialis anticus, and the anterior flexor muscles of the forearm and of the hand, all supplied by the branches from the outer and inner cords of the plexus, whereas the triceps and the posterior extensors of the forearm and fingers are supplied by the posterior cord of the plexus. A more detailed description of the plexus and its nerves cannot be discussed in this paper.

TYPES OF BRACHIAL PLEXUS PARALYSIS

The types of brachial birth palsy depend on the site and extent of the lesion to the nerve roots of the plexus. Total paralysis of the arm, including the hand and fingers, persisting for one year after birth, indicates an extensive injury to the entire plexus and a permanently paralyzed arm; in these cases, either all of the nerve roots are completely severed, or, in many cases, only several of the nerve roots are torn, and the remaining ones are so choked by the resulting fibrous tissue formations that they cannot functionate and are thus clinically the same as severed. Naturally, fibrous tissue formations about and in nerve lesions make the results of peripheral neurologic surgery always problematic, especially following an interval of months and years after the injury. Some of the nerve roots may be torn directly out of the spinal cord itself, even producing a homolateral increase of the deep reflexes and also a Babinski reflex, as suggested by Dr. Taylor.

There are many variations of incomplete brachial paralysis. The upper arm type is the most common, in which the trouble is due to a lesion of the fifth and sixth cervical nerve roots near their union; the seventh nerve is also frequently involved. As the suprascapular nerve emerges at or just below the junction of the fifth and sixth roots, its impairment is almost characteristic of brachial paralysis, in that the external rotators of the humerus are thus paralyzed and the arm is accordingly rotated inward by the unopposed action of the pectoralis major muscle, so that the forearm and the back of the hand are turned anteriorly in the position of pronation.

The lower arm type of brachial birth paralysis is very infrequent alone, owing to the fact that in head

presentations, the greatest tension is exerted on the upper roots of the plexus rather than on the lower ones, and thus a brachial paralysis of the upper arm type results; and in breech presentations other roots than merely the lower ones are injured, owing to the more extensive damage and greater tension on the entire plexus in this position. Therefore, the lower arm type of palsy alone is rare, and it is usually associated with the upper arm type in varying degrees. In it, the hand and some of the forearm muscles are paralyzed by a lesion of the lower nerve roots of the plexus — the eighth cervical and first dorsal, and frequently the seventh cervical roots. As the sympathetic nerve fibers of the deep cervical ganglionic plexus enter the spinal cord through the first dorsal and at times through the eighth cervical roots, there is frequently a resulting ipsolateral enophthalmos and a narrowing of the pupil, owing to the unopposed action of the motor oculi nerve.

Then again, there are the mild types of brachial plexus paralysis resulting usually from an overstretching of the roots with only a small amount of connective tissue formations. Clinically, various degrees of awkwardness, usually of the upper arm type of impairment, may be the only indication of the plexus lesion.

The atrophy of the arm muscles in brachial plexus paralysis is rarely so extreme as that occurring in the severe forms of poliomyelitis involving the entire arm. Even in the upper arm type of brachial palsy, the atrophy of the deltoid and the external rotators seldom reaches that degree of wasting so characteristic of infantile paralysis affecting the same muscle groups; the "flail" shoulder joint only infrequently occurs in the brachial birth palsies. I believe this is due not only to the fact that in poliomyelitis there are usually more than just one spinal cord segment affected primarily, so that the nerve cells of the adjacent anterior horns are also involved and thus a more extensive atrophy of the neighboring muscle groups, but also to the fact that in almost one half of the cases of brachial birth palsy, the nerve roots are found at operation not to be completely severed but merely choked by masses of scar tissue formations which prevent in varying degrees the normal afferent and efferent impulses from passing through this mechanical nerve block; it may be that in these cases, trophic impulses do succeed in passing through the obstruction, and thus the atrophy is not so marked as in similar cases of poliomyelitis. There is usually, however, a definite shortening of the arm. In this series of fifty-six patients on whom operation was performed, it is interesting to note that when the atrophy was not extreme (in 64 per cent. of these cases), all of the nerve roots had been not entirely severed, but rather blocked by scar tissue formation.

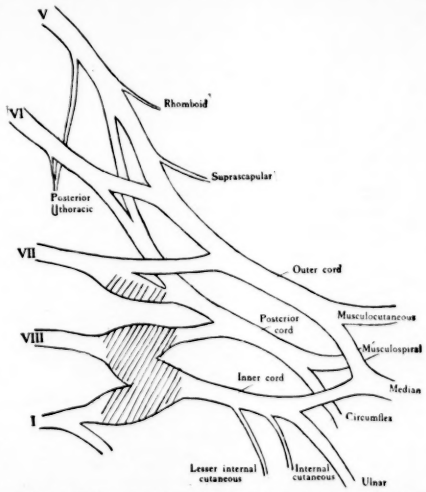

Fig. 3.—The lower arm type of brachial plexus lesion resulting from breech presentations and pulling on the affected arm. The entire plexus is usually involved in these cases, choked by a mass of resulting fibrous tissue, as in the shaded areas.

The impairment of sensation varies for the same reason. It is most unusual, even in the more extreme cases of brachial birth palsy to demonstrate anesthesia and even a marked hypesthesia except over the outer upper third of the arm. In the milder cases, especially when the atrophy is not extreme, little if any sensory impairment can be demonstrated. Naturally, in small children, impairment of sensation is always most difficult to elicit with any degree of accuracy; even in adults, however, sensory impairment may not be ascertained, except in the more severe types of plexus paralysis.

Dislocation of the shoulder joint is of fairly frequent occurrence. To be sure, any mechanical force sufficient to rupture the brachial plexus may cause a dislocation of the head of the humerus at the shoulder joint; then again, a dislocation of the shoulder joint alone may, in itself, simulate an injury to the upper roots of the brachial plexus with resulting apparent paralysis of the arm — of the upper arm type of palsy; but to maintain that the dislocation of the shoulder joint is the cause of the brachial birth palsy is in my opinion decidedly misleading. It must also be remembered that the paralysis and atrophy of the deltoid and external rotators, with a relaxation of the joint capsule due to a lesion of the upper roots of the plexus, permits the unopposed action of the pectoralis muscles to the extent that an anterior dislocation of the head of the humerus frequently results. There is no question that dislocation at the shoulder joint does occur alone in children, and frequently following difficult labors; but I do contend that if a careful examination is made, these cases of simple dislocation of the shoulder joint can be differentiated from the cases of brachial paralysis due to a lesion of the brachial plexus, and also when the dislocation is merely associated with brachial paralysis due to a lesion of the plexus; the associated dislocation may occur at the same time the plexus was injured, or it may be the result of the nerve injury.

Careful electrical tests for the reaction of degeneration in the older children, roentgenoscopy at the shoulder joint, and a thorough neurologic examination usually suffice to distinguish a simple dislocation from a simple plexus lesion. In doubtful cases, especially in the associated lesions of shoulder dislocation and plexus paralysis, it is better judgment to expose the plexus through a small skin incision than to allow the condition of nerve injury to persist for months and even

years; the longer the duration of the nerve lesion, the greater is the difficulty of anastomosing the nerve ends, the larger is the amount of scar tissue formation and the less marked the improvement ultimately. In only seven of this series of fifty-six cases with operation did the associated dislocation at the shoulder joint render the diagnosis of a brachial plexus lesion doubtful, and yet in each of the doubtful cases, an injury to the plexus was confirmed at operation. In only one case, that of a bilateral brachial paralysis of the upper arm type, a history of difficult labor and the paralysis of both arms observed by the midwife, father and the mother immediately after birth, did I not find at the operation a lesion of the plexus; there was a subluxation at both shoulder joints, reaction of degeneration of the deltoid and the external rotators and no sensory impairment elicited. As I could not demonstrate that the upper roots had been evulsed from the spinal cord within the dura, or that the roots had been torn within the vertebral foramina (which may have been the condition, although most unusual bilaterally), I now feel that this condition was one of poliomyelitis; bilateral brachial plexus paralysis is most uncommon.

Naturally, when permission for a skin incision to expose the brachial plexus cannot be obtained in doubtful cases associated with a shoulder dislocation, the impairment of the arm should be treated by all means as one of shoulder dislocation in the hope that the condition will improve; my experience with these cases, however, has not been encouraging from the end-results obtained. Improvement frequently occurs, but if the plexus is injured, not a useful arm. The fact that a dislocation at the shoulder joint in cases of brachial plexus paralysis is more frequently observed in the older children, those over 4 years of age, is of great importance in tending to show that the associated dislocation at the shoulder is merely secondary to the paralysis and atrophy of the shoulder muscles supplied by the upper roots of the injured brachial plexus; in children under 3 months of age, the dislocation of the shoulder is not so frequently observed, except alone as a simple dislocation. Besides, it is most uncommon to observe a brachial plexus paralysis of the lower arm type which is associated with a dislocation at the shoulder joint; naturally, in this type of paralysis there is little or no impairment of the muscles about the shoulder joint, and consequently a later subluxation at the joint does not occur; and yet the mechanics of this type of plexus injury by breech presentation would be more liable to produce a dislocation at the shoulder joint than in the upper type of plexus injury by head presentation.

TREATMENT

It is frequently asserted that the condition of brachial birth paralysis is cured either by immobilizing the affected arm in a sling or bandage and elevating the adjacent shoulder, thus allowing the nerve roots to unite, or by reducing the shoulder dislocation (when present) and treating the arm and shoulder in the same manner as for a simple shoulder dislocation. This statement is perfectly true regarding many mild cases of paralysis of the arm following birth in which either the brachial plexus has been merely overstretched, thus causing a temporary paralysis of the arm, or where the impairment of the arm is due to a simple dislocation at the shoulder joint. Naturally, immobilizing the affected arm and elevating the shoulder will permit the overstretched nerve roots to recover their function most readily, and even, in some cases, small tears of the nerve fibers themselves may unite, so that this treatment should be a routine procedure. Again, the reduction of a simple shoulder dislocation will cause a disappearance of the apparent paralysis of the upper arm. But to assume, therefore, that the condition of brachial plexus paralysis with rupture and separation of the nerve roots can thus be cured by this treatment in any considerable percentage of the cases is in my opinion not warranted by the end-results. I have yet to see cured by this method of treatment one case of brachial plexus paralysis in which at birth there was total paralysis of the arm, hand and fingers. No doubt improvement will occur in many cases with or even without any treatment at all, but *that* improvement rarely continues beyond 1 year of age, and the end-result is an impaired arm of greater or less severity; a useful arm is seldom obtained.

It is now my practice in cases in which there was complete paralysis of the arm, hand and fingers at birth to advise a skin incision, exposing the brachial plexus at 1 month of age. In each case in which the paralysis of the arm and hand was complete at birth, there was found at operation a rupture of two or more roots of the plexus. I feel that a total paralysis of the arm and hand indicates an extensive injury and tear in the plexus, and although an improvement frequently follows even without the special treatment of immobilization and elevation of the shoulder (which should be used in all cases, operation or no operation), yet the ultimate result will be an impaired arm. Usually, movement of the fingers occurs first, and then of the hand; possibly even the forearm can be flexed and extended with difficulty; but a perfect recovery is, in my opinion, most unusual.

In those cases of total paralysis of the arms, I advise the exposure of the plexus at 1 month of age for several reasons:

1. The child will stand the operation at that age better than at an earlier date, and as well as at any time several months later. Little if any anesthesia need be used at one month of age, and, in most operations on children under 1 year of age, the danger of the anesthetic is the greater risk.

2. The earlier the anastomosis of the nerve roots, the more perfect the union of the nerve fibers and consequently a greater improvement ultimately.

3. The earlier the operation, the less the formation of fibrous tissue, so that the operation of plexus exposure and nerve anastomosis is less difficult technically. The surrounding connective tissue resulting from the rupture of the plexus and the neighboring tissues with the associated hemorrhage of varying degree, and so forming the future scar tissue, can at this early date be dissected away with comparative ease and safety. Less resection of the nerve ends is necessary to remove the fibrous tissue formation and future scar tissue within the nerve sheaths — a very discouraging factor in peripheral nerve anastomoses after long duration and the one most frequent cause of poor results.

4. There is little or no retraction of the nerve ends at the age of 1 month, whereas, months later, the distal nerve roots may be retracted downward even beneath the clavicle, and in one case I was obliged to bisect the clavicle in order to expose the distal nerve end in the axilla and thus attempt its anastomosis with the proximal stump; in the less severe cases, the ends

may be buried in the surrounding tissues, requiring much patience, time and dissection to free them or even find them; this is particularly true of the distal end of the suprascapular nerve, which has normally a very tortuous course.

THE TECHNIC OF THE OPERATION

The exposure of the brachial plexus is a much less difficult procedure technically than is commonly believed. Not only is the plexus situated quite superficially from a surgical standpoint, but also the skin incision may be so placed in the supraclavicular space of the posterior triangle of the neck that the large blood vessels with the vagus and phrenic nerves are all internal to the pathway of approach to the plexus and are usually never seen; the spinal accessory nerve lies far above. Only the external jugular vein, occasionally unimportant superficial nerve filaments of the cervical plexus and the transverse cervical artery and vein are encountered as a rule, and these structures are frequently so placed that they may not require ligation or section. The subclavicular vessels rarely require exposure.

A transverse skin incision is advisable in that it can be placed in one of the natural horizontal folds or creases of the skin just above and parallel to the upper border of the clavicle, so that little if any scar is visible. Besides, the after-treatment of approximating the shoulder to the head by a bandage tends to hold the skin edges together, whereas this position would tend to keep the edges of the vertical skin incision separated, and a wide scar would ultimately result. Then again, a transverse incision permits a better retraction of the muscles and tissues in order to obtain a good exposure of the plexus; skilled retraction in this operation is most important. As in all peripheral neurologic anastomoses, absolute hemostasis is essential to obtain good results; the less oozing of blood, the fewer the adhesions — the bane of all nerve suturing. Warm saline compresses are possibly the most efficient means of controlling the oozing of blood, while careful, blunt dissection and gentle separation of the neighboring tissues tend to avoid the unnecessary loss of blood. It is usual to perform this operation on babies without the loss of more than 1 tablespoonful of blood, and if the blood that does stain the surrounding tissues is thoroughly removed by the application of warm saline solution before the incision is closed, adhesions and fibrous tissue formations will be practically avoided. The operation should not require more than one hour in even the more extensive injuries of the plexus, and in the younger children before the fibrous tissue has become firm and adherent the duration of the operation should be within forty minutes; if only the fifth and sixth nerve roots are involved, then twenty minutes may be sufficient. Naturally, in children of 3 months of age and younger, the less the amount and rapidity of the loss of blood, together with a light anesthetic of short duration, the better will be the assurance of an uncomplicated recovery. Then again, in ward cases, I feel it is very important following operation on these children under 1 year of age that the mother should nurse and take care of the child as under its normal conditions at home — conditions to which it has become accustomed and has adapted itself accordingly. This is particularly true following operations in selected cases of spastic paralysis due to an intracranial hemorrhage at birth, and also in conditions of spina bifida and hydrocephalus. The mother's milk, the warmth of the mother's breast and a careful avoidance of soiling the operative area, especially in cases of spina bifida in the lumbar region, are of the greatest importance in the obtaining of good results. The usual ward treatment of these babies operated on under 1 year of age is bad. In ward children under 1 year of age, if the mother cannot remain with the baby in the hospital before and after the operation, it is safer, in my opinion, to have the mother bring the child to the hospital on the morning of the operation, and then take it home several hours after the operation; naturally, if the child is not in the best of condition following the operation, then the mother and child would remain together in the hospital. Young babies accustomed to sleeping with their mothers will frequently "catch cold" if separated from them before or after an operation.

An excellent position of the patient for the operation is usually obtained by placing a firm, flat pillow, or small sand bag beneath the shoulder of the impaired arm; the anesthetist turns the head and face toward the other side, while a nurse depresses the shoulder by exerting a steady pull on the affected arm; in this manner, the supraclavicular space is freely exposed. The usual preparation of the operative area is now made, the skin incision outlined and dry sterile towels pinned to the skin so that only the skin incision is visible. The incision is a transverse one, 4 cm. in length, in a crease of the skin, about 2 cm. above and parallel to the upper margin of the clavicle. It lies in the lower part of the posterior triangular space with the external jugular vein usually as its center point. This vessel is either ligated or retracted, and then by blunt dissection and retraction of the deep cervical fat, sternomastoid and omohyoid muscles, the deep cervical fascia is exposed overlying the plexus and the scalenus muscles. The transverse process of the sixth cervical vertebra lies at the level of the junction of the fifth and sixth nerve roots, so that it can always be used as a guide. It is very easy to become "lost," if the retraction is exerted too much anteriorly or posteriorly. The deep cervical fascia is now incised over the plexus until a complete exposure of it is obtained. Normally, the deep cervical fascia is very thin and transparent, so that the underlying plexus, especially the fifth and sixth roots, can be seen glistening through it; but in these cases of injury to the plexus, the deep cervical fascia is thickened, whitish and nontransparent, owing to the fibrous tissue formation following the oozing of the blood at the time of the nerve tear; naturally, the earlier the operation, the more normal is the appearance of the fascia.

The location and course of the suprascapular nerve should now be ascertained; usually it is embedded in a mass of fibrous tissue, fat and connective tissue just external to the junction of the fifth and sixth nerve roots, and unless it is carefully dissected out, there is great risk of cutting it unknowingly so that it may be then very difficult to find the distal end. Besides, if the suprascapular nerve has not been primarily injured, but is merely unable to functionate owing to an injury of the fifth nerve root above the point of emergence of the suprascapular nerve, to cut it accidentally would only lessen the chances of a good result. I feel, therefore, that it is always advisable to locate the suprascapular nerve at the very beginning of the dissection.

In extensive lesions of the plexus, the fibrous tissue formation may be quite large, so that the nerve ends are entirely buried in a mass of scar tissue. In the

hope that the continuity of all of the nerve roots has not been destroyed anatomically, this mass of constricting fibrous tissue should be carefully dissected away, first from the fifth and sixth roots, then from the seventh, and finally from the eighth cervical and first dorsal nerve roots. It is rare for all of the roots to be torn, and if there are still normal nerve fibers in continuity within this mass of scar tissue, it is better judgment to save them, even though it does require more time, than to remove the fibrous tissue *en bloc* in the belief that all the nerve roots were completely severed, and then to find that there were still good nerve fibers within this fibrous mass, and that if they had been free from the constriction of the surrounding scar tissue they would have undoubtedly functionated.

If the nerve roots are found to be completely torn, their respective stumps should be secured, and their fibrous ends resected with a knife by slicing off transversely thin layers until the cross section of the nerve root of both the proximal and distal portions reveals the normal distinct nerve fibers in their bundles within the sheath — not the homogeneous whitish appearance of the scar tissue formation. The older the children, the more extensive is this scar tissue formation within the nerve sheath, and unless this fibrous tissue is removed (even if an inch or more of the nerve end must be resected), a good result cannot be obtained. It would be impossible for the proximal nerve fibers to grow down through the mass of fibrous tissue within the sheath of the nerve, and unless these fibrous ends are completely resected, a marked improvement cannot be expected. I believe the poor results reported in peripheral neurologic surgery are due chiefly to this mechanical obstruction to the anastomosis of the individual nerve fibers. If this obstruction is removed from each end of the torn nerve roots, it is merely a matter of technical approximation of the nerve ends, sheath to sheath, and the maintenance of this position for a period of three months until a firm anastomosis has been obtained. By elevating the shoulder and inclining the head toward the plexus, it is possible to "bridge" gaps in the resected nerve roots of 3 cm. and even greater without the tension on the nerve root becoming unduly high. When the separation of the nerve ends is greater than 3 or 4 cm., it is usually better judgment to unite the ends by one of the methods of "splicing" now used, or even "bridging" the gap by several strands of silk in the hope that the nerve fibers will be thus permitted to grow down to the distal portion of the nerve. A portion of a nerve removed from another part of the body may be used for the purpose, and the anastomosis carefully wrapped in Cargyle membrane, fat, muscle, etc. These, however, are minor considerations, when compared with the desirability of suturing the nerve ends themselves, end to end, and sheath to sheath, as carefully and as accurately as is possible, and the necessity of removing all the fibrous tissue from the ends of the nerve roots, resecting them until normal nerve fibers are visible. Fine black waxed silk is used to suture sheath to sheath, usually three sutures at one-third intervals around the nerve root. After the suture of the roots have all been "placed," the ends are brought together by approximating the head and shoulder, as described above, and the sutures carefully tied. The tissues are now carefully washed with warm saline solution, and if there is no oozing of blood, two or three catgut sutures are used to unite the subcutaneous tissues, and three or four fine silk sutures for the skin. No drain is necessary. A small sterile gauze compress is applied and retained in position by several strips of adhesive plaster, and then the usual gauze dressing. The arm is raised over the head, being made to grasp the opposite ear, if possible, and a gauze bandage with adhesive plaster holds it in position. I find this method of approximating the head and shoulder and then firmly securing the arm in position much more comfortable, safer and efficient than the various braces that have been used.

RESULTS

It is only within the past year that I have had the opportunity to operate on children with brachial plexus paralysis at the age of 3 months and younger. Before 1915, the children operated on by me were all over 1 year of age, the majority being between 4 and 6 years of age. Naturally, the older the child, the less the ultimate recovery; and yet I believe that with the improved technic even these older children can be greatly benefited. My oldest patient operated on for a brachial birth palsy was 14 years of age; the condition improved, but a good arm was not obtained. The children operated on at 3 months of age have made excellent recoveries; this is due partly to the fact that in them there was not a complete tear of all of the roots of the plexus, whereas, in the children operated on at 1 month of age, the plexus had been practically torn apart in that the arm, hand or fingers could not be moved at all, and thus the nerve lesion was always a more severe one. About half of these children operated on at 1 month of age, however, have shown a marked improvement; in four it may be possible to obtain a normal arm. As a rule, however, the children operated on at 3 months of age have shown a more constant improvement; and yet, if they had been operated on at 1 month of age, I am confident that a greater ultimate improvement would have occurred. The operation itself is not a dangerous one; there have been no deaths in this series of fifty-six cases. Two children had slight skin infections with no ill effects.

This report is made in order to emphasize the advisability of early diagnosis and anastomosis and repair of the injured brachial plexus, with the knowledge that unless the injured nerve roots of the plexus are so treated a normal arm cannot be obtained, whereas with the operation at an early date, the child has the chance of obtaining a useful arm or at least an improved arm.

20 West Fiftieth Street.

Bottled Waters.—The Bureau of Chemistry of the United States Department of Agriculture has been making an investigation of bottled waters sold in interstate commerce, which are subject to the Food and Drugs Act. After conferring with a large number of sanitarians and bacteriologists regarding a desirable standard for judging the sanitary character of bottled waters, the bureau has determined that the tolerances established by the Public Health Service of the Treasury Department for water served by interstate carriers is properly applicable to bottled waters sold in interstate commerce and imported from foreign countries. These standards are as follows:

1. The total number of bacteria developing on standard agar plates, incubated twenty-four hours at 37 C., shall not exceed 100 per cubic centimeter; provided, that the estimate shall be made from not less than two plates, showing such numbers and distribution of colonies as to indicate that the estimate is reliable and accurate.

2. Not more than one out of five 10 c.c. portions of any sample examined shall show (by the method of the Public Health Service) the presence of organisms of the *Bacillus coli* group.

VARIATIONS IN THE STRENGTH OF POSITIVE WASSERMANN REACTIONS IN CASES OF UNTREATED SYPHILIS

WITH REMARKS ON THE VARIATIONS WHICH FOLLOW THE USE OF MERCURY *

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Several writers[1] have called attention during the past few years to the conflicting results reported from various laboratories to which specimens of blood taken from the same individual at the same time were sent. In most cases the explanation offered for these differences has been that the various laboratory workers had used antigens which varied in strength.[2] This is undoubtedly true. However, in a recently completed series of more than 6,000 Wassermann reactions done on the serum from 5,000 individuals, we have made use of only one antigen, so that any variation described here cannot be attributed to this factor, as it has been repeatedly shown that this antigen is for all practical purposes constant,[3] and our conclusions after the use and comparison of more than twenty different lots of this cholesterin fortified alcoholic extract of human heart muscle antigen are in accord with those of the above mentioned authors. One purpose of this paper is to discuss those variations in results which occur independent of antigen differences. The technic used at this hospital has been described in detail previously.[4]

The variations within moderate limits of the complement titer of the serum of healthy guinea-pigs is a well recognized fact.[5] Very striking variations are also encountered in the resistance to hemolysis of the cells from different sheep so that frequently it is necessary to use 10 per cent. complement with the cells from one sheep and 8 per cent. with those from another sheep, the cells being of the same age, handled in the same way and titrated against the same lot of complement and amboceptor (Protocol 1).

PROTOCOL 1.—VARIATION IN SHEEP CELLS *

Tube No.	Standardized Amboceptor Dilution in c.c.	Guinea-Pig Serum, 10 per cent.	5 per cent. Sheep Cells A	5 per cent. sheep Cells B	Remarks
1	.5	.5	.5 C. H.	.5 C. H.	All tubes made up to 2.5 c.c. with 0.85% salt solution and incubated 1 hr. at 37.5 C.
2	.4	.5	.5 C. H.	.5 C. H.	
3	.3	.5	.5 C. H.	.5 C. H.	
4	.2	.5	.5 C. H.	.5 C. H.	
5	.1	.5	.5 N. C. H.	.5 C. H.	
6	.25	.4	.5 C. H.	.5 C. H.	
7	.25	.3	.5 C. H.	.5 C. H.	
8	.25	.25	.5 C H.	.5 C. H.	
9	.25	.2	.5 Sl. H	.5 C. H.	
10	.25	.1	.5 0	.5 Sl. H.	

* C. H., complete hemolysis; N. C. H., nearly complete hemolysis; Sl. H., slight hemolysis; 0, no hemolysis.

That this variation in cells will in spite of the most careful and repeated titrations of the hemolytic system give slight differences in results in the Wassermann reaction is demonstrated when positive serums are titrated in duplicate for the fixing unit, and cells of different resistance used. The cells being known to vary, the complement is titrated as carefully as possible for each lot of cells (Protocol 2).

The amboceptor, then, is the only constituent of the hemolytic system which is of constant strength. Slight variations away from the ideal hemolytic system are to be expected, and will account for a slight difference in the fixing unit of positive serums as determined from day to day on the same specimen of serum. Knowing this fact, it was thought advisable to repeat the work of Craig,[6] who found in a group of syphilitics not being treated and under ideal conditions for study most surprising variations in the fixing unit, which was determined daily for the same individual. The variation in at least two of the ten cases reported by him was so extreme as to lead to a report of + — (practically a negative reaction) on one day and + + (complete inhibition) on the following day.

PROTOCOL 2.—VARIATION WHEN POSITIVE SERUMS ARE TITRATED IN DUPLICATE WITH CELLS OF DIFFERENT RESISTANCE

Patient	Cells A with 10% Comp.	Cells B with 8% Comp.		Remarks
O'C.	.012 ++++	.025 ++++	.012 +++	Same lot of complement
B.	.012 ++++	.025 ++++	.012 +	Same amboceptor
R.	.006 ++++	.012 ++++	.006 +	Same specimen of serum

We accordingly selected a group of twenty cases of untreated syphilis including every stage of the disease. The patients were all in the medical wards of the hospital, where they were on a more or less standard diet and without alcohol. All specimens were collected under aseptic precautions, and care was taken that none of these cases received any antisyphilitic treatment during the period of study. The group includes two primary cases; two secondary cases with rash and mucous patches; two cases of cerebrospinal syphilis; two cases of tabes dorsalis; two cases of tertiary syphilis with gumma formation; two cases of syphilis of the aorta; four cases in the latent stage, and four other cases also in the latent stage, but convalescent from some acute infectious disease.

The blood from each of these individuals was obtained every day for seven days. In several cases the blood was tested against seven different hemolytic systems, and in every case the seven specimens were kept until the end of the period and then tested against a single hemolytic system. The results when daily tests were made were variable within narrow limits (Protocol 3).

It will be readily seen from Protocol 3 that the variations were minute, and in addition that in at least three of the four cases tabulated the variation was in the same direction on the same day. This gives the impression that it was our technic which varied and not the patient's serum. This surmise was well borne

* From the Medical Clinic of the Peter Bent Brigham Hospital.

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3. Walker, I. C., and Swift, H. F.: A Study of the Addition of Cholesterin to the Alcoholic Extracts of Tissues Used for Antigens in the Wassermann Reaction, Jour. Exper. Med., 1913, xviii, 75. Walker, I. C.: The Specificity of Cholesterin with Syphilitic Serums and of Cholesterin-Reinforced Heart Antigen in the Wassermann Reaction, Arch. Int. Med., October, 1914, p. 563. Fildes, P., and McIntosh, J.: The Wassermann Reaction and Its Application to Neurology, Brain, 1913, xxxvi, 193.

4. Walker, I. C.: The Specificity of Cholesterin with Syphilitic Serums and of Cholesterin-Reinforced Heart Antigen in the Wassermann Reaction, Arch. Int. Med., October, 1914, p. 563.

5. Wood, F. C.: Chemical and Microscopical Diagnosis, Ed. 3, New York, D. Appleton & Co., 1911, p. 687.

6. Craig, Variations in the Strength of the Wassermann Reaction in Untreated Syphilitic Infections, THE JOURNAL A. M. A., April 18, 1914, p. 1232.

out by the titration of these four serums on the same day against a single hemolytic system in which no variation whatever was found (Protocol 4).

The seven specimens from each of the remaining sixteen cases in the series of twenty were likewise titrated for the fixing unit against a single hemolytic system. In no case was variation worth mentioning found. The case which showed the most appreciable variation is shown in Protocol 5.

The remaining nineteen cases showed either an absolutely constant titer for each specimen or a variation which was decidedly within the limits of mechanical accuracy. This bears out our experience of the past two years, during which time we have recorded repeated tests on the blood of more than 100 different patients with syphilis, who were either in the latent stage and given no treatment or were given only enough treatment to clear up the local lesions for which they come to the hospital wards or outdoor department. These tests have been at different intervals of time, some repeated three or four times within a month, many more repeated three or more times at intervals of six months or less. Quite a few have been repeated at intervals of a year or more. These repeated tests total approximately 300, and we have never noted sufficient variation in these cases to cause us to credit the assertion that the positiveness of the serum itself is subject to changes from day to day or from month to month without treatment. In other words, there has been no discrepancy in results not accounted for by a slight variance in the hemolytic system. Our work, then, agrees with that of Field[7] who, unknown to himself at the time, titrated the blood of one individual four times within one month with identical results.

It has been long a matter of common knowledge that mercury in any form and given by any method is apt very quickly to cause a positive reaction to become negative. This false negative just as quickly becomes ++++ again when the administration of mercury is stopped. The comparative effect on the Wassermann reaction of various salts of mercury given intramuscularly, as well as the comparative effect of mercury given by different methods, was discussed as early as 1910 by Swift.[8]

Recently we have seen two cases frankly syphilitic showing in each instance a healing chancre, rash and mucous patches which gave entirely negative Wassermann reactions. In both cases mercury had been given to the point of salivation. One patient was given salvarsan and became ++++ ten days later. The other patient was kept under observation without any treatment and in one month became ++++.

The tendency of salvarsan to bring out a positive reaction is well shown by a comparison of these cases. They also bear out the statement of Swift that the early cases are more quickly rendered negative by mercury than the older ones.

Following the observation of these two cases, an attempt has been made to determine how long it is necessary to wait after treatment with mercury before any dependence can be placed on a negative test and also to determine how much mercury is necessary to convert a ++++ reaction to a temporarily negative one. After following a fairly large number of cases for more than a year and doing their Wassermann reactions repeatedly during this period, we have reached the conclusion that the individual variation in cases is so great that rules of only doubtful value can be

PROTOCOL 3.—RESULTS OF DAILY TESTS

Patient	Hemolytic System						
	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7
A	.05 ++++	.05 ++++	.04 ++++	.05 ++++	.05 ++++	.05 +++ +	.06 ++++
B	.02 ++++	.02 ++++	.01 ++++	.02 ++++	.02 ++++	.02 ++++	.03 ++++
C	.003 ++++	.003 ++++	.003 ++++	.003 ++++	.003 ++++	.003 ++++	.006 ++++
D	.006 ++++	.006 ++++	.003 ++++	.006 ++++	.006 ++++	.006 ++++	.012 ++++

PROTOCOL 4.—RESULTS OF TITRATION ON SAME DAY AGAINST A SINGLE HEMOLYTIC SYSTEM

Patient	Specimen						
	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7
A	.05 ++++	.05 ++++	.05 ++++	.05 ++++	.05 ++++	.05 ++++	.05 ++++
B	.02 ++++	.02 ++++	.02 ++++	.02 ++++	.02 ++++	.02 ++++	.02 ++++
C	.003 ++++	.003 ++++	.003 ++++	.003 ++++	.003 ++++	.003 ++++	.003 ++++
D	.006 ++++	.006 ++++	.006 ++++	.006 ++++	.006 ++++	.006 ++++	.006 ++++

PROTOCOL 5.—VARIATION IN CASE OF O'C., CONVALESCENT PNEUMONIA

Date	Amount of Serum Used, c.c.							
	0.10	.08	.06	.05	.04	.03	.025	.012
4/ 5/15	++++	++++	++++	++++	++++	++++	Negative	Negative
4/ 6/15	++++	++++	++++	++++	++++	++++	+++	Negative
4/ 7/15	++++	++++	++++	++++	++++	++++	++++	Negative
4/ 8/15	++++	++++	++++	++++	++++	++++	+	Negative
4/ 9/15	++++	++++	++++	++++	++++	++++	Negative	Negative
4/10/15	++++	++++	++++	++++	++++	++++	+	Negative
4/11/15	++++	++++	++++	++++	++++	++++	Negative	Negative

7. Field, C. W.: The Use of Cholesterin Antigen in the Wassermann Reaction, THE JOURNAL A. M. A., May 23, 1914, p. 1620.

8. Swift, H. F.: The Effect of Treatment on the Wassermann Reaction, Arch. Int. Med., December, 1910, p. 626.

established, and certainly no hard and fast statements can be made.

A group of twenty-five patients in various stages and of varying age of infection found ++++ on more than one occasion were given mercury intramuscularly until their Wassermann reactions became negative. Treatment was then discontinued until they again became ++++. The average length of time until the latter occurred was about one month. The extremes were, on the one hand, ten days, and on the other hand, four months. The more active the case the more readily the reaction returned ++++ as one would naturally suppose. Age of infection seemed to make little difference in the rapidity of the return to positive. As regards the amount of treatment necessary to get these cases negative, absolutely no conclusion can be reached except as mentioned before, that the more recent the infection the more easily the reaction is rendered negative. In some cases not included in this group, the reaction has never become negative, though little value in the treatment of syphilis, and they attribute the finding of negative reactions after the use of mercury to chance, and base their belief on the work of Craig.[9] In view of our findings previously noted, the conclusions of Nelson and Anderson seem to us to be open to question, and it is our belief that the negative Wassermann reactions noted by them are directly attributable to mercury. We are also of the opinion that the serum from cases of syphilis not under treatment will show very little variation in the degree of positiveness during the course of a few weeks, months or even years. What changes they ultimately undergo under these conditions we do not know because of the insufficient length of time during which our cases have been under observation. No one can deny that mercury given in any form has prompt and beneficial effect on the visible lesions of syphilis. In view of this fact and in view of its prompt effect on the Wassermann reaction, we consider the conclusions of Nelson and Anderson unwarranted.

PROTOCOL 6.—TYPICAL EXAMPLES OF CHANGES FROM POSITIVE TO NEGATIVE AND BACK AGAIN

Name	Age of Infection	Condition	Previous Treatment	Wassermann Reaction	Subsequent Course
Mr. D.	1 yr.	Latent	One dose salvarsan 1 year ago	7/24/14 ++++	12 injections mercury; 11/10/14 neg.; no treatment until 1/26/15 ++++; inunctions 3 mos.; 6/7/15 neg.; no treatment 4 mos.; 10/4/15 +++; 2 mos. inunctions; 12/16/15 neg.
Mrs. D.	6 mos.	Periostitis, skull	None	7/24/14 ++++	14 injections mercury; 11/10/14 neg.; no treatment until 1/15/15 ++++; inunctions 3 mos.; 4/6/15 +; inunctions 2 mos.; 10/8/15 neg.; no treatment for 2 mos.; 10/8/15 ++++
Mr. N.	4 mos.	Latent	Mercury 3 mos., none for 1 mo.	9/26/14 ++++	20 injections mercury and 3 mos. of inunctions; 4/10/15 neg.; no treatment until 10/29/15 ++++; inunctions 1 mo.; 12/17/15 ++++
Mr. R.	7 mos.	Rash and mucous patches	Six mos. of mercury; salivated now	7/16/15 negative	No treatment for 1 mo.; 8/21/15 ++++; salvarsan 2.1 grams; 10/18/15 +++; salvarsan 2.2 grams; 11/20/15 +++; 6 injections of mercury; 12/12/15 neg.
Mr. S.	5 mos.	Rash and mucous patches	Four mos. of mercury; salivated now	5/22/15 negative	6/1/15 neg.; 6/2/15 0.3 gm. salvarsan; 6/4/15 neg.; 6/6/15 neg.; 6/8/15 neg.; 6/12/15 +++; 1 mo. mercury inunctions; 7/15/15 neg; no treatment for 5 mos.; 12/10/15 ++++

they have been under treatment almost continuously for more than a year. This was noted particularly in cases of general paralysis of the insane and of syphilitic aortitis. It was also true of a number of cases in which small amounts of salvarsan were given in addition to the mercury.

A few typical examples of the cases showing changes from positive to negative and back again are shown in Protocol 6.

The regularity with which these cases change from ++++ to negative with mercury and back to ++++ again when treatment is stopped is very interesting, particularly when these cases are compared with those in which salvarsan alone is used or in which no treatment is given. The unfailing regularity with which cases not under treatment have given a ++++ reaction whenever done during a period of more than two years has already been noted in this paper. In a recent article Nelson and Anderson[9] describe in detail the changes produced on the Wassermann reaction by mercury salicylate given intramuscularly, noting also in their paper cases treated exactly similarly in which the reaction did not change. Their results directly parallel ours and those of other observers, but their conclusions differ markedly. The statement is made by them that mercury salicylate has

9. Nelson, Kent, and Anderson, E. A.: The Use of Mercury Salicylate in Syphilis: A Record of Its Influence on the Wassermann Reaction in Fifty Cases, THE JOURNAL A. M. A., Nov. 27, 1915, p. 1905.

CONCLUSIONS

1. The variations from month to month in the degree of positiveness of serums in cases of untreated syphilis is slight.

2. The fixing unit for the serums in cases of untreated syphilis does not vary appreciably from day to day.

3. Any variation found in daily titration for the fixing unit is due, provided the antigen is constant, to variation in the hemolytic system.

4. On the majority of positive Wassermann reactions, mercury has a prompt and powerful, although fleeting, action.

5. We cannot agree with the statement that mercury is of little value in the treatment of syphilis.

Disinfection of Hides.—An amendment to Order 211 of the Bureau of Animal Industry, United States Department of Agriculture, provides that the skins and hides from animals condemned for tuberculosis or any disease communicable to man or other animal may be removed from the place where they have been slaughtered for tanning or other industrial use only after disinfection by being immersed for not less than five minutes in a 5 per cent. solution of liquor cresolis compositus or a 5 per cent. solution of phenol, or for not less than four hours in a mixture composed of one part mercuric chlorid to 1,000 parts salt solution containing not less than 15 per cent. of sodium chlorid. This would provide against the spread of anthrax and perhaps foot and mouth disease, as well as tuberculosis.

RECURRENT PARALYSIS OF THE FACIAL NERVE

AND ITS RELATION TO THE SO-CALLED FACIOPLEGIC MIGRAINE

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An interesting and important chapter in the symptomatology of migraine is that concerned with the paralytic complications which may occur in this disease. I do not refer to those transient and evanescent symptoms which are so common, but to the more serious and permanent sequelae. These may be divided into two groups: (*a*) those of cerebral origin, namely, hemiplegia, hemianopsia and aphasia following organic vascular lesions during the migraine seizure, and (*b*) those affecting the cranial nerves, for example, the optic nerve and retina, and more especially the ophthalmoplegias. The latter complication is by far the most important by reason of its frequency, and at the present time constitutes a well established clinical group, the ophthalmoplegic migraine, of which about 100 cases have been reported in the literature. Of these the oculomotor nerve is most frequently affected, rarely the abducens and very rarely the trochlearis. Various combinations of these ocular palsies have also been observed, and even complete ophthalmoplegia. Curiously enough, the other motor cranial nerves are not involved in migraine with the exception of the facial nerve, the so-called facioplegic migraine. The basis on which this clinical type rests is a very slight one, and in my opinion has not been proved. What is generally accepted by many systematic writers as hemicrania facioplegica is nothing more than relapsing facial palsy in a subject afflicted with migraine.

"Recurrent" or "relapsing" facial palsy is a term which has been used to describe a group of cases characterized by a peculiar tendency to multiple attacks or recurrences. The palsy may recur always on the same side, the relapsing type, or more frequently there is alternate involvement of the two sides, in which case the term "relapsing alternating" is more accurate. The individual attacks in these cases may be separated by months or years, and do not differ in etiology and symptomatology from the usual clinical types of peripheral facial palsies. The interest which attaches to them is due merely to the frequency of the occurrence in a single individual, and the underlying pathologic tendencies which may favor such a predisposition.

This tendency is not always confined to one member of a family, but familial and even hereditary types are sometimes encountered. For example, Oppenheim[1] has recorded a family in which three of its members, all sufferers from diabetes, had recurrent attacks of facial palsy. The frequency of the relapsing form of Bell's palsy is much greater than is generally supposed.

Remak,[2] in a series of 200 cases, personally observed, noted a tendency to recurrence in 3 per cent., and Bernhardt,[3] on the basis of an extensive statistical study, placed the percentage as high as 7.2 per cent.

The etiologic factors are the same as those which cause the usual facial palsy with one attack, namely, the rheumatic or refrigeration palsy after exposure to cold; infections and intoxications, as diabetes, syphilis and otitis media, and perhaps also the congenital narrowing of the stylomastoid foramen which would predispose the nerve to pressure from slight inflammatory reactions. In Bernhardt's series of relapsing palsies, otitis media, syphilis and diabetes were present in a third of the cases.

THE SO-CALLED FACIOPLEGIC MIGRAINE

I would mention here two other types of relapsing facial palsies which have found their way into medical literature and are now widely quoted as examples of periodical facial palsy in the sense in which this term was used by Moebius[4] to describe the oculomotor palsies associated with migraine. One type is based on a fragmentary clinical report by Hatchek,[5] in which relapse of facial paralysis were observed in a child with basal tumor. This case he regarded as analogous to the so-called periodic oculomotor palsies of the Moebius type. No clinical data other than the brief statement just mentioned are given in the report of the society proceedings, and yet the attempt has been made to establish an important clinical group on this slight and uncertain evidence. It is probable that most neurologists of experience have observed such intermittent and transient attacks of facial palsy from pressure in cases of tumor beneath the tentorium, and yet would not think of giving them this interpretation.

The other type is founded on the oft-quoted contribution of Rossolimo[6] entitled "Relapsing Facial Palsy in Migraine."

> In this case a woman, aged 28, had been subject since the age of puberty to recurrent attacks of migraine, an inheritance from the mother. In the migrainous attacks which were quite typical, the pain was often localized in the mastoid and occipital region. She had at various times four attacks of facial palsy, in all of which the accompanying pain was localized in and around the mastoid region. In the first attack the pain was situated in the region of the left mastoid and superior maxilla, and lasted a week. It was accompanied by tinnitus aurium and a metallic taste on the tongue, and was followed by a typical facial palsy on the left side from which she recovered in five months. The attending physician at the time ascribed the condition to an exposure to cold. Three years later there was a similar attack. After sleeping by an open window on a train she awoke with pain localized in the neighborhood of the right ear and upper jaw and with all the accompanying symptoms of the first attack. The right facial palsy which ensued cleared up in about five months. Two years later there was a palsy on the right side of a similar nature, which was also preceded by localized headaches, and three years after this the left side was again involved with pain and the usual symptoms of facial palsy.

This case is reported by Rossolimo as one of migraine with relapsing facial palsy in which there is assumed to be an etiologic relationship between the migraine, which was undoubtedly present, and the multiple recurrences of facial palsy. On this evidence Rossolimo postulates a *facioplegic type of migraine* similar in nature to the ophthalmoplegic variety of Moebius which occupies so established a place in lit-

1. Oppenheim: Recidivirende Facialis Lähmung, Lehrbuch der Nervenkrankheiten, 1914, *i*, 641.
2. Remak, cited by Bernhardt: Neurol. Centralbl., 1899, p. 98.
3. Bernhardt: Ueber die sogenannte recidivirenden Facialis Lähmung, Neurol. Centralbl., 1899, xviii, 98.
4. Moebius: Recidivirende Facialis Lähmung, Erlenmeyers Centralbl., 1886, pp. 82, 797.
5. Hatchek: Ueber recidivirende Facialis Lähmung, Wien. med. Presse, 1894, iv, 146.
6. Rossolimo: Recidivirende Facialis Lähmung bei Migraine, Neurol. Centralbl., 1901, xx, 744.

erature. It should be emphasized, however, that this observation stands alone and does not present sufficient grounds on which to base such an analogy. In the Rossolimo case, the symptomatology of the attacks do not differ in the least from the usual clinical picture of relapsing facial palsy.

PAIN IN FACIAL PALSY

It has been well known since the studies of Webber[7] and Testaz,[8] and especially my own contributions to the sensory functions of the facial nerve, that severe pain is a frequent precursor and accompaniment of facial paralysis. When present it is localized in the ear and mastoid region, often radiating to the occiput and trigeminal distribution. The pain under such circumstances may reach an extreme degree of intensity and persistence, and is quite sufficient in itself to explain the severe localized headaches in the Rossolimo case, and may well give rise to the suspicion of a migraine seizure. That migraine coexisted in this case there can be no question; but as both migraine and facial palsy are comparatively frequent maladies, it requires no great stretch of the imagination to explain their joint occurrence in the same individual though etiologically unrelated and distinct. And, while the idea advanced by Rossolimo is suggestive, there is no reason at present for accepting a facioplegic type of migraine, an opinion which is shared by other neurologists who have been workers in this field.

With these preliminary remarks I will proceed to the report of personal observations of cases of relapsing facial palsy associated with pain in the ear and occipital headache.

CASE REPORTS

CASE 1.—*Relapsing alternating facial palsy associated with pain; three attacks.*

History.—A woman, aged 23, a gold leaf cutter by occupation, who had chorea at the age of 14, and whose family history is negative as regards facial palsy and migraine, had her first attack of facial palsy at the age of 17. It was situated on the left side. Paralysis was said to have been complete and was accompanied by earache and severe pains in the mastoid region. In the course of a few months she made a fair improvement, but there has always remained a slight permanent defect with weakness, twitchings and a tendency to contractures on the left side. The second attack of facial palsy occurred at the age of 22. In this the paralysis was situated on the *right* side and was also accompanied by quite severe pain in the ear and mastoid region. It followed an exposure to cold, sleeping by an open window on the train. The hearing was not affected, and there was no discharge from the ear. The sense of taste was lost on the right side of the tongue. Voluntary motion returned at the end of six months, and she made a very fair recovery. The third and last attack occurred in January, 1912, and was again on the right side, following seven months after the previous one. Like this it followed an exposure to cold. She had at the onset sore throat, and severe pains in the ear and mastoid region of the right side, which continued for some days.

Examination.—April 11, 1912, there was a seventh palsy of the peripheral type on the right side, involving all the branches of the nerve. Closure of the right eye was weak, and some weakness was also apparent on the left, a paretic remnant of the previous attack. On the right side there was weakness of the lower branch and on the left a tendency to overaction or contracture, the sequela of the previous lesion. There was very little movement in the upper branches on either side. On the left, which was the side of the old palsy, there were, in addition to overaction, fibrillary and clonic twitchings synchronous with the act of winking. The sense of taste was normal; hearing was equal on the two sides. There was no tinnitus aurium. Tear secretion was normal.

Electric Examination.—The right side showed complete reactions of degeneration. On the left side there was no faradic response and only very weak galvanic response, but no qualitative changes. The pupils were equal and reacted normally. All the other cranial nerves were normal. The optic disks were normal. The general neurologic examination was negative, and the urine was free from albumin and sugar.

Comment.—This was a typical example of relapsing alternating facial palsy; two of the attacks were on the right and one on the left side. As is so common in these cases, the palsy followed exposure to cold. During the early days of the palsy there was very definite and at times severe pain in the ear and mastoid region caused by involvement of the sensory system of the facial nerve.[9] After a few days this localized pain subsided, and might very well have been interpreted as a migraine phenomenon if we disregard the existence of pain as a common symptom of facial palsy. In the bilateral involvement of the face which occurs there is a weakness on one side, the result of a recent lesion, with contractural overaction on the opposite side following the older palsy.

CASE 2.—*Relapsing alternating facial palsy with pain, in a girl whose father had had similar attacks.*

History.—Miss B. W., aged 21, single, was referred to me for a recent peripheral facial palsy on the left side. She stated that this was the third attack. There was no history of migraine in the family. Her father had had two attacks of facial paralysis, both on the left side, the first attack occurring fifteen years ago and the second nine years later. They were attributed by his physician to exposure to cold, and he made a good recovery from each attack. Hearing was not affected in either. The patient's first attack occurred when she was 14 years old, and it was several months before the weakness of the face disappeared. She does not remember which side of the face was affected at this time, but she does recall receiving electric treatment and that recovery was complete. The second attack occurred two years later, that is, in her sixteenth year, and involved the right side of the face and was associated with pains in the ear and mastoid region. Recovery from this attack was incomplete, and there still persists some weakness and a tendency to contracture on this side. The third and last attack began a fortnight ago with pains in and about the left ear; they were quite severe and lasted for several days. A day or two later, left facial palsy was observed.

Eamination.—March 13, 1911, there was complete paralysis of the left side of the face of the peripheral type. The taste was disturbed over the anterior two thirds of the tongue on the affected side. No herpetic vesicles or scars were present in or about the auricle, and there was no hypesthesia of the conchal region. There was no tinnitus aurium. Hearing was normal. The tear reflex was present on both sides and equal. There were also evidences of a weakness of innervation with twitchings and contractures, the result of the previous attack on the right side.

Electric Examination.—This showed partial reactions of degeneration on the affected side. Optic and other cranial nerves were normal. The general neurologic examination was negative. The urine was free from albumin and sugar.

Reexamination.—One year later, April 1, 1912, there were evidences of a slight return of power on the left side of the face in all its branches, but with a distinct tendency to overaction and contracture. Twitchings and quiverings of the muscles about the check and angle of the mouth were evident, especially on closure of the eyes. Electric examination showed a slight galvanic response on the left side (cathodal closure contraction was greater than anodal closure contraction) with no evidence of sluggish or vermicular contractions. There was no response to strong faradic currents.

7. Webber: Pain and Facial Palsy, Boston Med. and Surg. Jour., 1876, p. 750.
8. Testaz: Paralysie douloureuse de la septième paire, Thèse de Paris, 1887.
9. Hunt, J. Ramsay: The Sensory System of the Facial Nerve and Its Symptomatology, Jour. Nerv. and Ment. Dis., 1909, p. 321.

V. 19

Comment.—This case is also a typical example of the relapsing facial palsy. Here again the associated pain and localized headache in the mastoid region is to be emphasized, due to involvement of the sensory fibers of the seventh nerve. A superficial resemblance to migraine attack may be simulated in such a case, and if migraine were also present, as in the Rossolimo case, might give rise to uncertainty as to their etiologic relationship.

CASE 3.—*Recurrent facial palsy accompanied by pain; three attacks.*

History.—The patient was a man aged 45, a cigar maker by occupation. He denied syphilis, had had no ear disease, or history of migraine, and no family history of attacks of facial palsy. His first attack occurred at the age of 10, and was on the right side. It had followed exposure to a cold wind. He recalls now no pain during this seizure, and recovery was complete in about four weeks. The second attack occurred in his thirty-sixth year, and was also on the right side. It was accompanied by considerable pain in the mastoid region. There were no disturbances of hearing. Complete recovery ensued in five weeks. The third and present attack appeared in his forty-fifth year, and was ushered in by a severe pain behind the right ear which lasted three weeks. Taste was not affected and hearing was normal. There were no sore throat and no herpetic eruption.

Examination.—December, 1911, there was a partial right facial palsy involving all three branches of the nerve. Taste was not affected. Hearing was equal on the two sides and normal. There was no hypesthesia of the concha or evidence of herpetic vesicles or scars. The tear reflex was present and equal on the two sides.

Electric Examination.—This showed partial reactions of degeneration of the right side of the face. The urine was free from albumin and sugar. The optic disks and other cranial nerves were normal. The general neurologic examination was negative.

Comment.—These were typical recurrences of facial palsy associated with localized pain in the ear and mastoid region from involvement of the sensory system of the seventh nerve.

REMARKS

The recurrent or relapsing facial palsy associated with pain in the ear and occipital region is, therefore, merely a peripheral paralysis of the seventh nerve, in which is manifested a peculiar tendency to multiple attacks or recurrences. The symptomatology corresponds in all its essentials to the more usual type in which there is but a single attack, and similar etiologic factors are also in evidence. Some emphasis may be placed on the theory of a narrow exit at the stylomastoid foramen, which was advanced by Despaigne[10] in explanation of these recurrences, and which might predispose the nerve to compression from very slight inflammatory cause. Such an anomaly might well be inherited. This, however, is only an ingenious theory, and calls for more definite pathologic confirmation. Occasionally there is a history of diabetes, so that this possibility should always be considered. Most of the cases are of infectious or refrigeration origin. In the infectious and rheumatic groups there is simply a constitutional tendency to peculiar local reactions to cold or infections, which expresses itself in terms of facial palsy, very similar to that which is observed in tonsillitis, sore throat, lumbago, sciatica and other rheumatic manifestations, with their well-known tendency to recurrences. A pathologic theory of the rheumatic or refrigeration palsies, advocated by many, is that of a perineuritis of the facial nerve similar to brachial and sciatic perineuritis of rheumatic origin. Such a lesion would be favored by the exposed situation of the nerve, any swelling of its structure within the fallopian aqueduct being immediately registered as pressure palsy, a result which would naturally be enhanced by the presence of a congenitally narrow canal. This theory would explain some of the familial and hereditary types which are occasionally observed, the constitutional tendency or diathesis being also transmitted.

Facial palsy as a sequela of the migraine attack, the *facioplegic migraine* of some writers, is not a clinical entity. At the present time there are no adequate reasons for the acceptance of such a clinical type. The Rossolimo[6] case which forms the chief support of this teaching is evidently only a recurrent facial palsy with marked sensory symptoms in a woman afflicted with migraine, and one searches the literature in vain for examples of a true facioplegic migraine. Furthermore, the fragmentary case report of Hatchek,[5] which is sometimes spoken of as a periodic facial palsy, as this term was used by Moebius to describe the periodical oculomotor palsies, is an equally erroneous interpretation. The relapses in the Hatchek case, conservatively interpreted, represent nothing more than pressure or traction of the facial nerve, this giving rise to intermittence in the paralysis, an occurrence which is by no means rare as a forerunner of permanent palsy in cases of subtentorial tumors. If the facial nerve has any relation to migraine, which is so well established in the case of the ocular nerves, this relationship has yet to be demonstrated. The cases thus far cited do not furnish sufficient grounds for any such assumption. Therefore titles like "periodic facial palsy" and "facioplegic migraine" are misnomers which have crept into some of the best monographs dealing with this subject. Such terms are misleading and denote nothing more than transient intermittent facial palsy as a focal symptom of basal tumor in the one case, and the not uncommon relapsing facial palsy associated with pain in the other. It is of course self-evident that migraine and facial palsy, both of which are common affections, may be encountered in the same individual but are etiologically distinct.

20 West Fiftieth Street.

10. Despaigne: Etudes sur la paralysie faciale peripherique, Thèse de Paris, 1888.

EXTRAGENITAL SYPHILITIC INFECTION

REPORT OF CASE

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BOSTON

Accidental extragenital infection from syphilis is not a rare condition, and cases are reported from time to time in medical journals. My only excuse for reporting the following case is once more to remind the physician of the need for greater care in protecting himself from infection.

This patient proves one other important fact, that since the introduction of serodiagnosis for syphilis, many totally unsuspected cases of syphilitic disease are being brought to light. Most of these cases doubtless are the result of genital infection in which the initial lesion was so insignificant that it wholly escaped observation by the patient. It is reasonable to suppose, however, that many arise from extragenital infections of which the patient is wholly innocent as well as ignorant until some late manifestation of the disease appears.

This patient also illustrates the falsity of Colles' law that, owing to a sort of protective vaccination through

the placenta with the specific virus a woman who bears a syphilitic child enjoys perfect immunity, and this in the absence of all signs of infection. If the Wassermann test had not been performed on the patient's wife, she would have seemed to escape infection. Trinchese,[1] after declaring the fallacy of both Profeta's and Colles' laws, says that there is no paternal transmission of syphilis, and hence the fetus does not generate immunizing substances and the placenta does not permit the passage of immunizing substances from the maternal to the fetal tissues. A syphilitic mother can have a child clinically free from syphilis and with a negative Wassermann, or the Wassermann may be positive; the child may have symptoms of syphilis and a positive Wassermann, or it may have symptoms and a negative Wassermann.

REPORT OF CASE

T. J. H., physician, Celtic, aged 29, whose parents were living, in good health, and who had two brothers and one sister, all of whom were in good health, had measles as a child, but otherwise no illness. There was no history of any venereal infection. The patient was married in 1910. The wife, aged 29, had five brothers and sisters, and these, as well as both parents, were all living and well. She had had no serious illness, and there was no history of venereal infection. A healthy child was born in 1911.

In the spring of 1912, while engaged in an active surgical practice, the patient developed what he supposed to be a felon of his finger. Another physician examined the finger and also pronounced it a felon. The sore was a troublesome one, and finally healed, after about six months of local treatment. The following autumn there was a mild epidemic of dengue in the town in which the patient was residing, and the patient believed that he had an attack. He suffered for several days with pains in the bones and joints, and had an eruption over the body resembling that usually seen in dengue. Following this attack the patient suffered a good deal from insomnia, and he lost weight, but continued in active practice.

Mrs. H. had been perfectly well during the entire course of her husband's illness. In November, 1912, in the eighth month of pregnancy, her older child kicked her in the abdomen. From that moment all sensation of quickening ceased, and ten days later a macerated fetus was born. The death of the fetus was attributed to injury. In 1913 she noted some tendency to alopecia, but this was transient. In October, 1914, a healthy male child was born at term. Labor was uncomplicated. The child appeared perfectly normal. In the fifth week the child was brought to the hospital with the history that it had had a slight cold in the head for several days. Examination showed the infant to be moribund. There was a scaly eruption about the finger nails, and the liver and spleen were enormously enlarged. After about five hours the child expired.

A partial necropsy was performed, and portions of the spleen and liver were removed. Syphilis being suspected, the father was minutely questioned, but denied venereal infection. Examination showed the scar on the finger from the felon. The postcervical glands were enlarged. Wassermann tests were then made on the patient, his wife and oldest child. Those of the parents were both positive. That of the child, who was evidently born before infection in 1911, was absolutely negative. A vigorous course of treatment with salvarsan was immediately instituted in both parents, in whom the serum reaction ultimately became negative. Histologic examination was made of tissues removed from the dead infant. The spleen showed many spirochetes in the walls of some of the trabeculae and blood vessels. The liver showed marked follicular cirrhosis with fatty change. Spirochetes could be demonstrated in the liver substance.

Peter Bent Brigham Hospital.

1. Trinchese, J.: Infektions- und Immunitätsgesetze bei materner und fötaler Lues, Deutsch. med. Wchnschr., 1915, xli, No. 19; abstr., THE JOURNAL A. M. A., June 19, 1915, p. 2102.

INFECTION OF OVARIAN DERMOID CYST WITH TYPHOID BACILLUS

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Many cases have been reported of the unusual location of the typhoid bacillus. Thus, the bacilli have been found in abscesses of the liver and spleen, in subphrenic abscesses, and in sacculated and general peritonitis, osteomyelitis, periostitis, etc. The following case, if not unique, seems sufficiently rare to justify recording it. Besides the unusual location of the typhoid bacillus, the definite history of a recent attack of typhoid fever is to be noted, and also the quantity of pus produced in which no other bacteria except the typhoid bacilli were found.

Miss M. S., aged 21, schoolteacher, a native of this country, entered the New Haven Hospital, May 21, 1914, on account of enlargement of the lower part of the abdomen. About April 21 she first noticed a mass in the lower part of the abdomen, which rapidly enlarged but was accompanied by no pain. Last Christmas she was ill, and January 12 had a positive Widal reaction. She had a typical case of typhoid fever, and was out of bed by March 1. Just previous to this attack, her brother also had typhoid fever with a positive Widal reaction and no complications.

Physical examination showed a large tumor in the lower part of the abdomen, quite firm and movable, lying on the left side. Otherwise examination was negative.

Operation was performed by Dr. Ramsay. A large ovarian cyst on the left side was aspirated, and about 2 quarts of thin pus removed. A few strands of hair were attached to the cannula on removal. The tumor was ligated at its pedicle and removed.

On bacteriologic examination, a smear showed a gram-negative bacillus. The growth showed a gram-negative motile bacillus in pure culture which did not produce gas in sugar mediums, did not liquefy gelatin, and did not coagulate milk. A bouillon culture was agglutinated by a known typhoid serum in as high a dilution as 1:1,600. A rabbit immunized against this organism by injections, at first of a killed bouillon culture, and then with a living culture, gave a serum which agglutinated a known typhoid bacillus in dilutions of 1:100 and 1:200. Higher dilutions were not made. The organism was diagnosed as the *Bacillus typhosus.*

Pathologic examination of the cyst in gross after fixation revealed a growth 15 by 15 by 11 cm. in largest diameters. The fallopian tube was attached on one side when the cyst was opened, a quantity of grayish liquid, containing a fatlike substance such as is commonly found in dermoid cysts, came out, and masses of this fatty material containing hairs were removed. At one portion where the wall was thickest, there was a tuft of hair growing from the wall. At another portion there was a short nipple-like projection somewhat calcified. Microscopic examination revealed an infected ovarian cyst.

The patient made an uneventful recovery, and has had no further complications.

Causes of Death of Physicians in Norway.—I. Kobro has recently published a statistical study of the morbidity and mortality of Norwegian physicians from 1900 to 1908. The average age at death of 1,015 physicians during this period was 55.8 years. The age at graduation is usually 27. The mortality among physicians was higher than in other classes of society below the age of 70. By decades it was 17.2, in contrast with 7.8 per cent. of those outside the profession in the thirties; 19.1 and 8.69, respectively, in the forties; 17.2 and 12.22 in the fifties; 21.25 and 19.29 in the sixties, but over 80 it was 7.65 to 24.6 per cent., respectively.

New Instruments and Suggestions

A RAPID METHOD OF COUNTING LIVING BACTERIA IN MILK AND OTHER RICHLY SEEDED MATERIALS*

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Associate Professor of Agricultural Bacteriology, University of Wisconsin

In a preliminary note on this subject (*Science*, Aug. 20, 1915, p. 255), I called attention to a new method of milk analysis by which it is possible to grow the bacteria in milk into colonies in the course of a few hours. These colonies are big enough and sufficiently distinct to count under the compound microscope. In order to bring them out more distinctly, they are stained before counting. Practical tests have been made and seem to show that this method gives results that are quite uniform and satisfactory when compared with those obtained by the ordinary or standard plate method. In this paper it is proposed to discuss this method in detail.

The impatience which commercial milk men often express because they are obliged to wait so long for the results of bacteriologic milk analyses led me to think seriously of the matter of quicker methods. A study of the Stewart-Slack and Breed methods of direct microscopic examination gave me the idea that they are not entirely satisfactory. The results obtained from the direct microscopic examination and the ordinary plate methods differ so widely principally because of the fact that some of the bacteria which show up under the microscope and are counted are dead, and hence not able to produce colonies. This conclusion is borne out by Conn's recent article (*Public Health Reports*, Aug. 13, 1915, p. 2349). Furthermore neither can be used with pasteurized milk.

The present method was conceived and worked out during the fall of 1913. At this time I had the voluntary help of Miss Lucy Wells Fox.

Briefly stated, this method is as follows: One-twentieth c.c. of milk is mixed with standard nutrient agar and spread over a definite area of a sterile glass slide. When the agar is hard, this little plate culture is put in the incubator for about six hours under conditions which prevent evaporation.

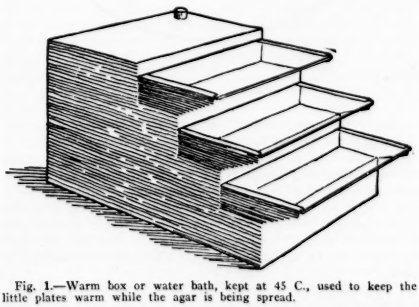


Fig. 1.—Warm box or water bath, kept at 45 C., used to keep the little plates warm while the agar is being spread.

It is then dried, given a preliminary treatment to prevent the agar from firmly binding the stain, stained, decolorized and cleared. When this dried and stained plate culture is viewed under the microscope, the little colonies are definitely stained and appear highly colored on a colorless or slightly colored background. These colonies can be readily counted and the number of bacteria per cubic centimeter calculated.

* Read at the meetings of the Society of American Bacteriologists, Urbana, Ill., December, 1915.

METHOD IN DETAIL

Preparing the Glass Slides.—The little plates are made on ordinary microscopic glass slides (2.5 by 7.5 cm.). These are carefully cleaned and are then ruled with a grease pencil so that a square surface, over the center of the slide, is surrounded by a greased line. The included area is 4 sq. cm. The ruling is best done by having a wooden or cardboard frame for the slide and some arrangement, as brads, to hold a straight edge in place. These ruled slides are then sterilized by passing them through a gas flame, and then they

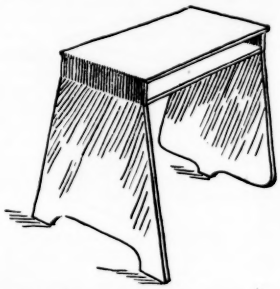


Fig. 2.—Nivellating apparatus for setting agar on little plates in a film of uniform thickness.

are placed on a warm box (45 C., 113 F.) provided with an overhanging top to protect them from the dust (Fig. 1).

Making Plates.—A few tubes of ordinary nutrient agar are then melted and placed in a water bath at 45 C. to cool. Some sterile plugged test tubes are also put in this water bath to warm up (one for each sample of milk to be tested). The milk sample to be tested is then thoroughly shaken, and 1 c.c. is transferred to one of the warm sterile test tubes. To this is added an equal amount (1 c.c.) of the melted agar. The milk and agar are thoroughly mixed, care being taken to prevent the agar from cooling below 40 C. (104 F.). It is best to warm it up frequently by putting it in the 45 C. water bath.

One-tenth c.c. of the milk and agar mixture is then (by means of a sterile pipet) transferred to a warm glass slide and spread as quickly and evenly as possible over the marked square. This can be readily done with the help of the pipet while the slide is on the warm plate (Fig. 1). The agar is allowed to set firmly by placing it on a level surface under cover for a few moments (Fig. 2). This makes a little plate culture containing 0.05 c.c. of milk.

When the milk being examined is supposed to contain more than a million bacteria per cubic centimeter, it should be diluted with sterile water or sterile milk before it is mixed with the agar. The dilution may be 1:2 or up to 1:10. This would make the final dilution as much as 1:200.

Incubation.—This is accomplished by placing the little plates in an incubator in a specially prepared cabinet (Fig. 3), or moist chamber with a layer of water in the bottom to maintain a saturated atmosphere. (A Petri dish may be used for a few slides.) The incubation temperature is 37 C. (98.6 F.), and the time varies; but, where possible, five or six hours should be allowed. For market and other milks kept in a warm place for some time before being plated, three or four hours may be sufficient. In the case of recently pasteurized or very good milks, the time will probably need to be lengthened to eight or even twelve hours.

Drying of Plates.—When the colonies are sufficiently large, the slides are dried. This should be done carefully. If they dry too fast or too long, the agar film cracks. They dry well in an incubator or over a steam radiator if protected from the iron by a piece of wood or glass. At this temperature the time required is about ten minutes.

Staining.—The dried slides are: (1) fixed in the flame; (2) put into a 10 per cent. acetic acid solution in 95 per cent. alcohol in a staining jar for one minute; (3) put into Loeffler's methylene blue, dilution 1:4, for three minutes; (4) decolorized in 95 per cent. alcohol for a few seconds or until the background is a pale blue and the dark blue colonies stand out prominently; (5) dried without washing.

COUNTING COLONIES

The slides are examined under the microscope in the usual way. For the purpose of counting the colonies, the preparation can be examined dry with the lower powers of the microscope; but if it is desired to study the structure of the colonies or count with a high dry lens, it will be necessary and it is always best to use a mounting medium and a cover glass. Cedar oil serves quite well, and in that case the cover glass can be removed for use with the oil immersion, or, of course, the mounting can be done in balsam in the usual way. A microscopic examination of these plates reveals colonies of considerable size and deeply stained in a light blue field. It is surprising to one who has never seen them before how large the colonies may become in the course of a few hours. The staining process should be so regulated that the bacteria in the colonies will be as distinctly stained as possible and yet not have the field too deep a blue.

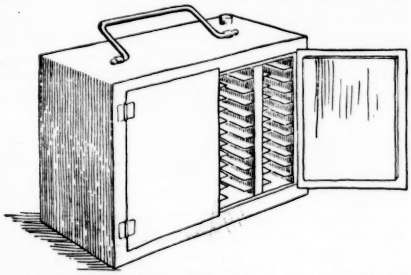


Fig. 3.—Incubating cabinet. Little plates are kept moist during incubation. Cabinet is put in incubator.

If the dilution has been properly chosen, these little plates will show from two or three to fifty colonies for each microscopic field when the low power is used (two-thirds inch or 16 mm. lens). With a medium sized eyepiece (3) the magnification is a little less than 100 diameters. This has been found a satisfactory magnification to use. If higher powers are used, it is difficult, in some milks at least, to distinguish colonies from clumps of bacteria that have not grown. The count is usually higher with the high powers of the microscope.

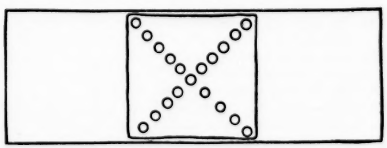


Fig. 4.—Glass slide with little plate on it. The series of circles indicate the microscopic fields which it is desirable to count in order to get a fair idea of the number of colonies on the slide.

Whatever the magnification used, the method of counting is practically the same. A good light is needed. The whole plate must be gone over in a systematic way, and the fields selected for counting must be picked out mechanically and not by choice in order to avoid the factor of personal equation as much as possible. A mechanical stage is therefore desirable, and it is suggested that at least twenty fields on each plate be counted. We usually count in two diagonal rows as indicated in the diagram (Fig. 4). In counting, a register is desirable. It is also important to count only one half of the colonies that touch the edge of the field; otherwise the area of the field would actually be considerably larger than that computed. Of the colonies in a field bisected by the margain of that field, we count only those on the right hand half (Fig. 5). Only those colonies are counted which touch the edge where the double line is drawn.

CALCULATING THE NUMBER OF BACTERIA PER CUBIC CENTIMETER

The number of bacteria per cubic centimeter of milk can be easily calculated by multiplying the number of colonies in an average microscopic field by the number of times the area of this field is contained in 400 sq.mm. (4 sq.cm.), or the area of the little plates times the dilution of the milk used.

The area of the microscopic field, for any definite combination of lenses and tube length, is a constant, and can be determined by the formula: Area $= \pi R^2$. The radius of the field can be measured by means of a stage micrometer. We found, for example, that a Leitz microscope, objective 3 and ocular 3, the area of the field was approximately 2 sq.mm. With the one-fourth inch objective (B. & L.) and No. 3 ocular, the area of the field was approximately 0.2 sq.mm., and with the same ocular but a one-twelfth inch oil immersion objective, the area was 0.02 sq.mm. In order to keep this factor an integer or with as many ciphers as possible, it is desirable to vary the tube length of the microscope. In this case it is, of course, essential to be sure that the tube is pulled out to the proper length whenever the counts are made.

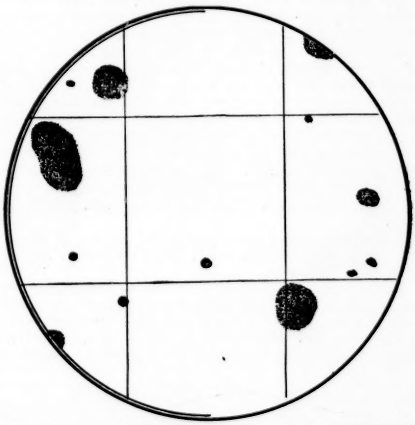


Fig. 5.—A microscopic field showing the little colonies from milk in a plate five hours old. There are twelve colonies (the thirteenth is not counted because it is bisected by the margin of the field and only one half of such are counted).

If the microscopic factor is known, then this formula is applicable:

$$\frac{\text{Number of colonies counted}}{\text{Number of fields counted}} \times \text{Reciprocal of dilution of the milk} \times \text{Microscope factor} = \text{Number of bacteria per cubic centimeter.}$$

For example:

$$\frac{600}{20} \times 20 \times 200 = \frac{2,400,000}{20} = 120,000 \text{ bacteria per cubic centimeter}$$

where

600 is the number of colonies counted
20 the number of fields counted
20 represents the dilution, that is, 1:20
200 the microscope factor

AN EFFICIENT AND INEXPENSIVE FOAMING INHIBITOR*

ADOLPH BERNHARD, B.S., NEW YORK

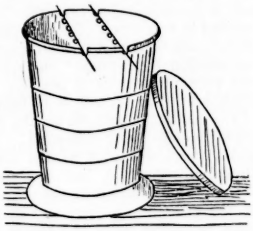
In seeking an economical substitute for caprylic alcohol as a foaming inhibitor during aeration in the determination of ammonia in urine, blood, etc., we have found that kerosene and amyl alcohol used separately are unreliable, especially when rapid suction is employed. A mixture of equal parts of kerosene and amyl alcohol is as efficient as caprylic alcohol, and can be employed with safety even with strong suction. Greater quantities of the mixture must be used, from 2 to 4 c.c. being required, whereas only a few drops of caprylic alcohol suffice. Notwithstanding this fact, the cheapness of the constituents of this mixture more than counterbalance the greater amount necessary.

We make this note in hopes it may aid other workers in this field who have been embarrassed by the difficulty in obtaining caprylic alcohol.

A SIMPLE METHOD FOR ESTIMATING THE COAGULATION TIME OF BLOOD

MARCUS WARD LYON, JR., PH.D., WASHINGTON, D. C.

The query of X. Y. Z. (THE JOURNAL, Jan. 22, 1916, p. 298), regarding a simple method of estimating the coagulation time of the blood, calls to mind the simple and cheap modification of the Biffi-Brooks apparatus, illustrated herewith, which I fixed up some years ago and used in teaching clinical laboratory methods.



Apparatus for estimating the coagulation time of the blood.

It consists of a collapsible aluminum cup with a cover, with two pairs of notches cut with a saw opposite one another in the top rim of the cup and two pieces of platinum wire, each with four loops.

In use the cup is filled with water warmed to 37 C. (98.6 F.) to within about 1 centimeter of the top. The loops of the wire are quickly touched in succession to the blood from a freely flowing puncture, and the wires suspended in the notches at the top of the cup and the cover gently laid over. At the expiration of two or three minutes the cover is removed and one loopful of blood is immersed in the water. The wire and cover are quickly replaced and the same procedure gone through with at half or one minute intervals. By noting the lapse of time from the start until a drop fails to wash out, one easily estimates the coagulation time of the blood.

In the hands of students it worked exceedingly well, and when used against the Boggs-Russell-Brodie apparatus gave approximately the same results. When not in use the wires are gently bent and placed inside the collapsed cup. As near as I can remember, the cup cost 10 and the wire 50 cents.

George Washington University.

* From the Laboratory of the German Hospital and Dispensary in the City of New York.

"Preventive Medicine."—To lengthen the interval between birth and death has been the aim of the medical profession since the days of Esculapius, but within a generation, in fact since the days of Pasteur, has arisen a new school which is destined to crowd the healers for place—the school wrongfully termed "preventive medicine," wrongfully termed because "prevention" requires no medicine; its use for the individual has passed when medicine is required, except in controlling the relation of the individual to society.—William J. V. Deacon, *Am. Jour. Pub. Health.*

Therapeutics

SCIATIC NEURALGIA AND SCIATIC NEURITIS

While the sciatic nerve or its branches may transmit painful sensations, the nerve itself may not always be affected, as pathologic conditions of the hip joint (arthritis, tuberculosis or tumor growth, as sarcoma) may cause pain down the sciatic nerve.

As with backache,[1] a patient who has sciatic pain should be carefully examined to determine, if possible, the cause. True sciatica is generally a perineuritis, from which this nerve suffers more than almost any other nerve of the body. Sciatica may be either acute or chronic. In the acute form it is perhaps the cause of more continuous and repeated suffering than almost any other curable disturbance.

Hunt[2] offers a classification of sciatica which suggests etiologic treatment. Unless the cause of the pain is removed, the nerve will continue to cause symptoms. According to this classification, the causes of neuritis are:

1. Intrapelvic disease, such as specific exudates within the pelvis, in venous congestion, pressure from a pregnant uterus, new growths, and a loaded rectum.
2. Constitutional states, such as syphilis, alcoholism, etc.
3. Damage to the nerve trunk from injury or exposure to cold.
4. Damage to the sacro-iliac joint.

The most frequent cause of sciatica in women is pelvic disturbance and pelvic pressure. In men a rheumatic and gouty tendency is frequently an associated cause, and exposure to cold seems to be a frequent exciting cause. A possibly important factor in the development of sciatica is the compression of the nerve against the tuberosity of the ischium by asymmetrical sitting on a hard seat.

The disturbance of equilibrium caused by a weakened plantar arch or other foot disturbance must be considered, as well as the possibility of a heavy patient lying in bed too long on his side, and thus causing pressure in the region of the hip. The springs of the bed and mattress, with extra pillows and cushions if necessary, should be so arranged as to relieve all possible continued injury to the sciatic nerve.

When the cause of the disturbance is considered to be a general one, a possible focus of infection should be sought. A frequent cause in adults is infection in and around teeth, or possibly in a tonsil.

Besides syphilis and alcohol as causes of sciatica, diabetes and malarial poisoning should be considered. Impaired circulation in the legs, from varicose veins or from insufficiency of the heart, may perpetuate sciatica after it has once started, and treatment in such instances must be directed toward improving the circulation.

SYMPTOMS

It is hardly necessary to refer to the symptoms of neuritis of the sciatic nerve. Often a patient can map out the course of the nerve by describing where he feels pain, and if not pain, where he feels twinges or peculiar sensations of irritation. There may be, after some days of a real inflammation of the nerve trunk, regions of paresthesia in different parts of the leg supplied by branches of this nerve, and still later

1. Backache, Therapeutics, THE JOURNAL A. M. A., March 4, 1916, p. 740.
2. Hunt: Med. Rec., New York, 1913, lxxxiii, 1153.

there may be impaired mobility of some muscles. The pain may be so severe as to be tearing or boring in character, and there may be attacks of cramps or contractions of one or more muscles causing very intense pain. There may be some reddening of the skin along the course of the nerve, local elevation of temperature, and rarely some edematous symptoms. The electric excitability may be increased at first, and later diminished. The patellar reflexes are normal at first, and later may be diminished. Occasionally a herpes may occur; there may be some local sweating, showing trophic disturbance. In chronic sciatic pain, the pain may become almost a habit or a condition expected by the patient, so that the general neurotic condition must be treated more than the local pain.

GENERAL TREATMENT

Besides removing the cause of sciatica, if such is possible, the general treatment is important. The diet should be modified according to the general condition. In some instances the meat should be removed from the diet. In other instances it should not be withdrawn; in fact, protein should be pushed and nutrition increased. Constipation should always be prevented. The treatment may be started with a brisk purge, as castor oil or calomel. The bowels should be moved daily, with salines if there is plethora, overweight and a good heart, and with vegetable laxatives if the patient is underweight, anemic, or with poor circulation.

Rest of this nerve is of primary importance, even if there is only a neuralgic condition, that is, an irritation without a neuritis or perineuritis, and it is imperative when there is a neuritis or perineuritis. A neurotic habit of the individual should always be noted. If such is present, this pain, like any other, will be harder to combat, and the main treatment should be toward the general condition, whether neurasthenic, hysteric or plainly neurotic. Like any other painful nerve, it must be kept warm. Warmth is one of the most important elements of local treatment.

In acute inflammations of this nerve the pain is so excessive that generally morphin must be given. But before morphin is resorted to, the leg should be immobilized and sometimes made rigid with a long splint. It is generally best not to give atropin with morphin, as atropin acts only on the peripheral endings of nerves, and in this case the nerve trunk is in trouble, and the atropin will combat somewhat the sedative action of the morphin. Also the morphin may have to be repeated more frequently than it would be wise to repeat the atropin. When the pain is not sufficiently severe to require morphin, antipyrin will sometimes act as a valuable sedative; also novaspirin, especially if the patient is rheumatic.

LOCAL TREATMENT

Besides the local treatment already suggested, dry cupping and cauterizing, and at times blistering along the course of the nerve, may be not only of temporary but also of permanent benefit. Sometimes the d'Arsonval high frequency current is of benefit in subacute and chronic cases. Sooner or later, gentle massage is of benefit.

When this nerve is somewhat stretched and at rest, especially when the leg is surrounded by dry heat, as by hot sand bags or other methods of applying heat, excruciating pain may entirely cease. Such patients are fortunate, as narcotics need not be given.

If there is a rheumatic condition present, large doses of salicylates are of benefit. Alkalies are frequently of service, such as potassium citrate in 2 gram doses, in wintergreen water, given three or four times in twenty-four hours. If there is a nervous irritability and considerable cerebral irritation, bromids are of value, but they should be soon discontinued, as they interfere with nutrition and are very depressant, and calcium should be substituted.

Sometimes warmth is well applied to this nerve by a cradle containing electric lamps, and the leg is subjected to this kind of heat and the resulting local sweating once or twice a day for from fifteen minutes to half an hour.

High frequency currents have been applied to this painful nerve, sometimes with good results; but often electricity in any form is not well tolerated.

Ethyl chlorid spray along the course of the nerve or in different painful regions of the nerve has been reported to be successful in modifying the pain. Epinephrin ointments have been gently rubbed into the skin along the course of the nerve with some success.

Salt solutions, cocain solutions and beta-eucain solutions have been injected around the nerve sheath in prolonged acute and subacute cases with considerable success. The injection treatment with sterile water or sterile physiologic saline solution is an old treatment, and is recently being revived. This treatment is not advised in every case of sciatic pain, as many individuals are benefited and recover from ordinary local and constitutional treatment; but when the inflammation and pain persists, it is perhaps the most successful treatment. The technic is as follows:

The patient should lie on the abdomen, on a table, with the legs fully extended. A support is placed under the lower part of the abdomen to relax the gluteal muscles. A line is drawn from the sacrococcygeal articulation to the posterior external border of the great trochanter, and at the juncture of the inner third and outer two thirds of this line is found the spine of the ischium. One inch to the outer side of this point is the point of puncture. Paint the skin with iodin. A syringe with a slip tip which allows the needle, to fit the barrel directly is preferable. The needle should be of steel, 12 cm. long with a caliber of 2 mm., and with a sharp point protected by a dull tipped stylet projecting beyond the point of the needle. Before penetrating the skin and subcutaneous tissue, the stylet is withdrawn beyond the cutting edge. It is then replaced, and the needle pushed in perpendicularly. The sciatic nerve is usually reached at a depth ranging from 6 to 12 cm. The patient may feel either a sharp pain radiating from the point of contact to the popliteal space or down to the foot; or a sharp pain in the corresponding heel; or there may occur a jerking movement of the leg; or a sudden twitch of the calf muscles. The syringe is filled with sterile physiologic saline solution at a temperature of from 95 to 100 F. The stylet is removed and the syringe slipped on to the needle. Eighty to 100 c.c. of the fluid is rapidly injected. The needle is quickly withdrawn, the iodin washed off with alcohol, and the point of puncture covered. The patient should remain in bed for at least twenty-four hours. The pain generally almost entirely disappears in twenty-four hours, although there may be some pain down the peroneal nerve. A second injection, when necessary, should not be given ordinarily until a week after the first one. When the patient feels numbness and heaviness in the extremity,

the pain from the injection ceases. The object aimed at is to infiltrate the tissue around the nerve. The nerve sheath should not be punctured, as a large amount of fluid forced into the trunk of the nerve causes paralysis and traumatic neuritis.

Beta-eucain has been used as an infiltration injection in strength of 0.1 per cent. solution and 100 c.c. in bulk. Cocain has been used in 1.5 per cent., 2 c.c. in bulk, followed by 100 c.c. of physiologic saline solution.

Injections of small bulk into the sheath of the sciatic nerve, called nerve blocking, have been done frequently in the severe forms of sciatica. A hypodermic syringe full of plain, cold water has been used, also cocain solutions, sometimes morphin solutions, and sometimes alcohol.

Whatever injection treatment is done, the treatment should be considered radical, and should be done by one who has become proficient in this operative therapy, as sometimes uncomfortable symptoms are developed.

The injection of alcohol has been shown by Cadwalader[3] to be unjustifiable, as alcohol destroys nerve tissue. He found that salt solution injection into the sciatic nerve did not cause any degeneration, while strong alcoholic solutions caused destruction of nerve tissue.

Stretching the sciatic nerve has been recommended for many years, and is sometimes of great value in relieving pain, especially if the nerve and leg are then put at rest, allowing the inflammation to heal. This may be done nonoperatively, by extending the leg in various directions and thus stretching the nerve; or it has been done operatively by an incision over the nerve at its exit from the pelvis, and the muscles pushed aside and the nerve picked up and stretched. This is a rather severe therapeutic measure. The method is described by Nannini.[4]

PAIN IN THE FEET

This troublesome subject has recently been discussed by Frauenthal.[5] He premises the diagnosis of the cause of pain in the foot by the statement that when the pain comes on acutely it is due either to an injury or to an infection; when the pain comes on gradually, there is some relaxation of ligaments or supporting structures. He deplores the promiscuous use of foot plates, some of these metal supports doing more harm than good. A proper fitting shoe is the first essential to comfort of the foot. An arch may not be broken or may not have fallen, and may not need a support. All it needs is a proper adjustment of the heel to the foot tread and a proper arch to the shoe. Also, pain in the forward part of the foot is often not caused by a weakened arch, and an arch support will not correct pain in other weakened joints or ligaments. On the other hand, when the arch has fallen or has become weak, and there is a rotation of the ankle inward, besides a proper fitting shoe a plate or support that fits the foot and corrects the deformity may and will often entirely relieve the pain in the foot and the associated pain of the leg and back. Various exercises of the foot muscles may strengthen the arch and later allow of the removal of this artificial support.

Barnes[6] of Washington calls attention to an overlooked cause of sore feet, and especially to the overlooked condition causing a painful ball of the foot. Pain and tenderness in this region of the foot has become much more common than formerly on account of the craze for dancing. He finds that a few anatomists call attention to sesamoid bones as being normal in this region of the foot and especially likely to be present at the metatarsophalangeal joint of the great toe, namely, the ball of the foot.

By a series of roentgenograms of normal feet and feet that are painful in this region, Barnes finds that the sesamoid bone is part of Nature's method of protecting this joint and causing normal tread and normal support. He also finds that this sesamoid bone may be fractured or may become injured and not only cause pain from its own disturbance, but cause pain in the joint above it. He orders shoes made with a depression in this region of the sole, and causes comfort, and cures his patients of their disability. In acute injuries of this region nothing will be of so much benefit as rest.

At times irritation or injury may cause an exostosis to occur in this region, which of course can be cured only by surgery.

3. Cadwalader, W. B.: Injection of Alcoholic Solutions of Different Strengths into Peripheral Nerves, THE JOURNAL A. M. A., June 5, 1915, p. 1892.

4. Nannini: Riforma med., 1914, xxx, 813.

5. Frauenthal: Painful Feet, THE JOURNAL A. M. A., Nov. 27, 1915, p. 1897.

6. Barnes, N. P.: Sesamoids of Flexor Brevis Hallucis, New York Med. Jour., 1915, cii, 940; abstr., THE JOURNAL A. M. A., Nov. 20, 1915, p. 1852.

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SATURDAY, MARCH 18, 1916

FURTHER OBSERVATIONS ON THE CAUSE OF RAT-BITE FEVER

In a review of the various alleged etiologic factors in relation to rat-bite fever, or sokodu, which has long been recognized in Japan as a definite febrile disease, it was remarked in a recent number of THE JOURNAL[1] that new cases will undoubtedly soon be brought to light in greater number. This is the familiar consequence of the publicity of education. It was also pointed out that renewed study of the disease, when fresh opportunities are discovered, would be likely to settle the debated question as to whether the causative agent is a spirochete, as some have asserted, or some other form of detrimental organism.

Since our comment on the subject, further contributions have appeared. Investigators[2] at the Imperial Japanese Institute for Infectious Diseases, in Tokyo, have identified spirochetes in preparations from two well defined cases. The organism is described as somewhat larger than the *Spirochaeta pallida*, but smaller than the *Spirochaetae duttoni* and *obermeieri*. One of the patients was treated with mercury, and the other with salvarsan. Both recovered. In this connection the Japanese investigators recalled the fact that in recurrent fever, one of the spirochetal diseases which shows a temperature curve similar to that of rat-bite fever, salvarsan has proved effective; in syphilis likewise, which also resembles rat-bite fever in the swelling of the lymph glands and in skin eruptions, there is improvement with salvarsan or mercury. On the basis of these analogies as well as of the microscopic findings, they suggest, with due reserve, that the newly discovered spirochete is in all probability the cause of rat-bite fever.

On the other hand, Blake,[3] of the Peter Bent Brigham Hospital in Boston, has lately described a case of rat-bite fever which terminated fatally and furnished an opportunity at necropsy to add to the almost unknown pathologic anatomy of the disease. The clinical picture which justified the diagnosis was typical of the recognized syndrome of the disease. There was a history of a rat bite, a latent incubation period, nonsuppurative lymphangitis, high fever ushered in by a severe chill, severe generalized muscular pain, stuporous condition, and a characteristic bluish-red macular exanthem. From the blood of this patient during life Blake isolated a streptothrix in pure culture and apparently identified it with *Streptothrix muris ratti* first described by Schottmüller,[4] in 1914, after its isolation by him in eight consecutive blood cultures taken during a period of two months in a case of rat-bite fever.

Although successful animal inoculations have not yet fulfilled the strict requirements for the demonstration of the unquestioned etiologic relation of the streptothrix of Schottmüller to the disease, Blake is inclined to emphasize the high probability of this causative factor. Not only did he isolate the organism, but he succeeded further in showing the development of a powerful agglutinin in the patient's blood serum for the streptothrix. Furthermore, the necropsy revealed an ulcerative endocarditis caused by a streptothrix; and the presence of a morphologically similar organism in the sections of the mitral vegetation in the absence of other demonstrable organisms is taken as strong presumptive evidence that the same organism was the cause of the endocarditis.

In view of the fact that only one necropsy has previously been recorded in the literature of rat-bite fever, it is of interest to note the character and extent of the lesions here found. In addition to the striking streptothrix septicemia with localization of the organism in the mitral valve, producing an acute ulcerative endocarditis, there were the infarcts of the spleen and kidneys as a natural consequence. The subacute lesions of the myocardium, liver, suprarenals and kidneys, glomerular and interstitial, were all of a similar nature, consisting of areas infiltrated with leukocytes, lymphocytes, plasma and endothelial cells with varying degrees of degeneration of the normal cells of the affected area. It may be assumed that these lesions were toxic in origin, since the presence of the streptothrix itself was not demonstrated in them.

Commenting on the facts at present known in reference to rat-bite fever, with the indications of similarity in symptomatology to cases occurring in Asia, Europe and America, Blake[3] remarks that it no longer appears necessary to consider that cases arising in this country are due to the bites of rats that have been imported from Japan. The greater frequency of the disease in Japan than elsewhere is probably due to the housing conditions and habits of the people, resulting in more frequent occurrence of rat bites. So long as some uncertainty remains as to the actual etiology, the scien-

1. **The Cause** of Rat-Bite Fever, editorial, THE JOURNAL A. M. A., Oct. 9, 1915, p. 1285.

2. Futaki, K.; Takaki, F.; Taniguchi, T., and Osumi, S.: The Cause of Rat-Bite Fever, Jour. Exper. Med., 1916, xxiii, 249.

3. Blake, F. G.: The Etiology of Rat-Bite Fever, Jour. Exper. Med., 1916, xxiii, 39.

4. Schottmüller, H.: Dermat. Wchnschr., 1914, lviii, Supplement 77.

tific basis for rational treatment must remain in doubt. Meanwhile salvarsan and similar chemotherapy deserve continued trial on the basis of clinical experience, if nothing else.

MUMPS

In view of the succession of brilliant discoveries which have disclosed the etiologic agents in the production of many infectious diseases, thereby paving the way for the relief and control of the harm instigated by them, there is something tantalizing in the limitations of progress which have been experienced in other instances. The infectious diseases, indeed, still offer abundant opportunities for investigation. The rôle of bacteria as a cause of several has long been clearly understood. The responsibility of protozoa for certain other pathologic states is now better appreciated. For a considerable number of still different diseases there is as yet no certainty either as to the identity of the organism that causes them, or even as to whether the causative agent is really of the germinal type. Some undoubted infections still defy all search as to the nature of the etiologic factor; and in the case of some of these, the fact that the virus retains its infectious property, even after being passed through a fine porcelain filter, gives ground for the hypothesis that the germs here present are too minute to be recognized in the usual way with the present powers of our microscopes. Here one must deal with the so-called filterable viruses.

Mumps is one of the highly infectious diseases, its etiology is unknown, it is always more or less present, in cities, at least, and it is liable to be epidemic at certain seasons of the year. A number of microorganisms have been described in the past as the presumable causative agents; but every serious attempt to apply to these bacteria the criteria and demonstrations which are called for, before the relation of cause and effect in disease can be regarded as proved, has failed. In 1908 Granata[1] concluded that the virus of mumps may be of the filterable type. However, neither he nor Nicolle and Conseil,[2] who injected bacteria-free fluid from the parotids in cases of human parotitis and obtained in animals symptoms somewhat comparable with those of mumps, really succeeded in reproducing the disease satisfactorily. Not a little interest must center, therefore, in the newest experiments in this field by Dr. Martha Wollstein[3] at the Rockefeller Institute for Medical Research. She has succeeded in reproducing the chief organic lesions of parotitis in animals by means of filtered extracts of saliva derived from persons suffering from acute parotitis. Thus injections, into cats, of bacteria-free filtrates of the saliva have been capable of setting up a series of pathologic changes in the parotids and testicles, expressed by fever, leukocytosis, tenderness and swelling attended by definite histologic alterations. There is a greatly added significance in the further fact that the effect of the injection is intensified by successive transfers of the inoculated organs from animal to animal through several passages.

It is almost needless to add, at a time when the importance of adequate control of such significant findings is obviously imperative, that the effects attributed to the saliva from patients with parotitis did not follow the injection of filtrates prepared from the saliva of healthy persons. The active agent present in the infectious saliva was found to be neutralized or in some way rendered ineffective by the serum of an animal that had survived the injection of testicular and parotid emulsions, while the serum of a normal animal had no such power. Here, then, is a phenomenon surprisingly like others that are now familiar in the experience of immunology in infectious diseases. Dr. Wollstein remarks that in all these manifestations obviously ordinary bacteria can be excluded as the active agent, since they were never found in microscopic preparations of the "filtrate," or in aerobic or anaerobic tissue cultures or in sections of the inoculated parotid and testes. Under these circumstances it seems reasonable to suppose that the active agent is of living nature, thus suggesting the existence here of a minute filterable virus. As a corollary to this, the power of prevention exercised by the serum may be assumed to be due to an immune substance developed in the inoculated animals. This is an approach, at least, to the determination of the specific microbic cause of parotitis or mumps in man.

1. Granata, S.: Med. ital., 1908, vi, 647, 672.
2. Nicolle, C., and Conseil, E.: Compt. rend. Acad. d. sc., 1913, clvii, 340.
3. Wollstein, Martha: An Experimental Study of Parotitis (Mumps), Jour. Exper. Med., 1916, xxxiii, 353.

ARTIFICIAL PNEUMOTHORAX IN THE TREATMENT OF PULMONARY TUBERCULOSIS

Carson, in 1821, first recommended the use of artificial pneumothorax in the treatment of pulmonary tuberculosis. In 1882, Forlanini described the method which, after more or less sporadic trials, has been adopted in almost all sanatoriums and hospitals for tuberculosis. Recently, Sachs[1] has reviewed 1,145 cases treated by this method by twenty-four American observers. The results appear to correspond closely to those of other authors,[2] and it may be of interest to review briefly the chief points.

There are two general methods of procedure, of which the original is the simpler and the one usually employed. Without anesthesia, under aseptic conditions, a small aspirating needle connected with a suitable apparatus is introduced through an intercostal space. Entrance into the pleural cavity is ascertained

1. Sachs, T. B.: Artificial Pneumothorax in the Treatment of Pulmonary Tuberculosis, THE JOURNAL A. M. A., Nov. 27, 1915, p. 1861; Tr. Nat. Assn. f. Study and Prev. Tuberc., 1915, p. 150.
2. For example, Grundt, E.: Norsk Mag. f. Lægevidensk., 1915, lxxvi, 1527.

by the reading of the manometer which is attached. Only when free pleural space is encountered may the gas be allowed to flow in. Since, under proper conditions, the gas is sucked in, great pressure is unnecessary as well as a source of danger. Repeated introduction may be necessary. While Forlanini advocated the initial use of from 200 to 300 c.c. of gas repeated daily, it is the custom now to begin with from 500 to 1,000 c.c., repeating the inflation every two or three days until the lung is completely collapsed, as indicated by Roentgen examination. Then inflation once a week, and later, when the pleura loses its capacity for absorption, inflation at intervals of from two to three weeks usually suffices. The compression may be maintained for one to two years or more, the lung then being allowed slowly to expand. While nitrogen is absorbed less readily, sterile air gives the same result. Brauer, to avoid air embolism, recommends for the first injection the use of an incision long enough to permit inspection of the pleura. Some patients who are not improved by ordinary unilateral pneumothorax are benefited by alternate inflation of the two pleurae, an interval being allowed to elapse each time until the gas previously injected has been absorbed. Von Adelung[3] reports four cases in which simultaneous inflation of the two pleural cavities was practiced. He recommends the method in selected cases.

Compression tends not only to stop the growth of tuberculous foci but also to cause healing. Cavities are collapsed, and their contents expressed and coughed up. Tubercle bacilli may disappear from the sputum. With the lessening of lymph and blood supply, "autoinoculation" and "autointoxication" are diminished. Immediately following inflation, the temperature usually rises because of increased absorption, and expectoration and dyspnea are aggravated; but this usually is only temporary.

Of the cases studied by Sachs, 912 were far advanced. Benefit, apparently lasting, resulted in 29.9 per cent. of 1,108 cases, while the effect was merely palliative in 21.7 per cent. From these results, it is apparent that with the class of patients selected, the method is applicable in only a little over half of the cases.

Conservatism is desirable in the selection of cases. Thorough preliminary study and consideration of the probable effect on the other lung are essential. The best results are to be expected before the development of extensive adhesions, marked involvement of the opposite lung, and irreparable lowering of the general resistance. The importance of the condition of the opposite lung is indicated by the occurrence in the study by Sachs of death in about 13 per cent. and arrest or recovery in 50 per cent. of ninety-one unilateral cases, and death in 26 per cent. and recovery or arrest in 25 per cent. of 162 cases with bilateral involvement. Even in late stages good results may be obtained in patients with severe or repeated hemoptysis and with marked secondary infection, provided the side affected can be determined. Severe cardiac disease presents a contraindication.

With better technic and conservative selection of cases, accidents are diminishing in number. Pleural effusion is the most frequent complication, occurring 113 times in 748 cases reported by fifteen American authors. Peters[4] found that in 60 per cent. of cases observed by him for a year or more, varying amounts of fluid developed in the pleural cavity. He concludes that, given time, fluids develop in most of the patients, the fluid in some cases becoming purulent from the presence of tubercle bacilli only, while in a small percentage secondary infection takes place. Although a disadvantage, the fluid, according to Peters, should be let alone unless causing pressure or fever.

It may be concluded, that while the sphere of application is being modified by greater conservatism in the selection of cases, the tendency is toward the use of artificial pneumothorax in all suitable progressive cases of pulmonary tuberculosis, regardless of stage, which do not respond to ordinary sanatorium treatment.

3. Von Adelung, E.: Double Induced Pneumothorax, THE JOURNAL A. M. A., March 4, 1916, p. 735.

4. Peters: Tr. Nat. Assn. f. Study and Prev. Tuberc., 1915, p. 186.

ALVEOLAR AIR AND ACIDOSIS

In the advance of scientific medicine, new and more exact methods of diagnosis are constantly appearing. It was a great step forward when knowledge of metabolism and diseases of metabolism reached such a level that definite diagnostic and prognostic data could be obtained by laboratory means. The utilization of these data in treatment is rapidly advancing also. Calorimetry likewise has made no small contribution to clinical progress. And yet, in spite of the increased knowledge of the total metabolism and its disorders, there remains the still more difficult problem of devising methods which shall give diagnostic and prognostic light on the various processes of intermediate metabolism, processes not only of synthesis but also especially under conditions of pathologic functioning, processes of catabolism or the breaking down of food and tissue elements.

The great difficulty has been to secure methods which would give a reliable index of what was actually transpiring in the body under conditions of abnormal function. The various emunctory agents yield important evidence, of course, particularly the urine; but substances appearing in the urine are end-products, and, again, are dependent on the filtering ability of the kidney. Hence there are evident inaccuracies in such examinations, and important or even vital data may be wholly lacking. There is a practical limitation set to the direct examination of the blood by the time and technical difficulties involved. The conditions

thus sketched, therefore, make of peculiar value a method which shall throw light on these hidden problems of vital functioning, and at the same time shall be practicable for clinical use.

One such method seems to have been found in the study of the concentration of carbon dioxid in the alveolar air. This concentration corresponds to the concentration in the blood. One of the independent factors which maintains the normal equilibrium of the reaction of the blood is the influence which its content of carbon dioxid has on the activity of the respiratory center. The carbon dioxid acts as a weak acid, and the normal stimulation of the respiratory center, ordinarily produced by an increase of carbon dioxid in the blood, is not a specific action, but an action caused by an increase of active acidity, or of H-ion concentration, in the blood. The total, or titratable acidity, is due not alone to volatile acids, of which the chief is carbon dioxid, but also to nonvolatile acids whose excretion is largely through the kidneys. Any condition which increases the amount of nonvolatile acids in the blood will diminish the capacity of the blood for neutralizing carbon dioxid, or in this condition whatever carbon dioxid is added to the blood by the tissues causes a greater increase of active acidity than it otherwise would. By virtue of the strong automatic regulation of the blood reaction and the increased aeration of the blood resulting from the respiratory stimulation, the increased amount of nonvolatile acid in the blood tends, therefore, to decrease the amount of carbon dioxid in the blood and hence in the alveolar air. This is the condition called acidosis, and it is characterized clinically by air hunger, or dyspnea, stupor, delirium, vomiting, convulsions and finally coma.

Therefore, since the concentration of carbon dioxid in the alveolar air corresponds to that in the blood, and since its concentration in the blood decreases as other acid bodies increase, it is evident that the concentration of carbon dioxid in the alveolar air gives a direct and immediate quantitative gage of the degree of acidosis. The normal tension of carbon dioxid in the alveolar air is remarkably constant in different persons and in the same person at different times. The chief variations depend largely on the consumption of carbohydrate, which raises the amount. Depending somewhat on the method of analysis used, normal figures lie between 38 and 45 mm. partial pressure. The method of analysis is comparatively simple, and is practicable for clinical application, at least in institutions.

Francis W. Peabody,[1] in an extensive study of the alveolar air as an index of acidosis, has made an interesting report from the medical clinic of the Peter Bent Brigham Hospital in Boston. In diabetes, in which acidosis so commonly plays a preeminent rôle, the production of abnormal products of fat metabolism, such as aceto-acetic acid, acetone and the beta-oxybutyric acid, may go on for some time without clinical symptoms, because the blood compensates for the acid addition by an automatic chemical readjustment which maintains the blood reaction near its normal. Finally, however, the reserve supply of bases in the tissue is exhausted and the increased acidity of the blood stimulates the respiratory center, causing increased aeration, and a decrease in the carbon dioxid tension of the blood. With this increasing acidosis, greater and greater aeration is produced by the increasing respiratory stimulation, until the clinical picture of extreme air hunger is reached. Death follows unless acid formation can be decreased or basic substances increased for neutralization of the acid.

It is well known that examination of the urine is an inefficient guide to the degree and rapidity of acidosis. Direct examination of the blood for these acid substances is slow and technically difficult. Peabody therefore concludes that analysis of the carbon dioxid tension of the alveolar air gives promise of furnishing a most useful aid in estimating the severity and course of acidosis. He found that when the alveolar carbon dioxid fell below normal, the patient entered the danger zone. Between 30 and 35 mm. of carbon dioxid indicated considerable acidosis and the need of treatment. But a tension between 20 and 30 mm. is much more serious and requires the closest oversight. "A constantly falling carbon dioxid tension is a serious warning and is of great prognostic value. If the carbon dioxid tension is down to 20 mm. or lower, the patient has reached a state in which coma may suddenly appear." In one case of diabetic coma the alveolar air showed from 6 to 10 mm. of carbon dioxid. In view of these data it is also evident that the alveolar air will give an accurate index of the effect of treatment in acidosis. In fact, treatment can be directed according to the rise or fall of the carbon dioxid tension.

In chronic nephritis there is an acidosis due to retention of acid products in the circulation, owing to inability of the kidney to excrete them. This is shown by the fall in phenolsulphonephthalein output and by the increase in nonprotein nitrogen accompanying the condition. Because of the retention, urinalysis does not give much aid in determining the degree of acidosis. In those cases of uremia in chronic nephritis in which air hunger and acidosis play a prominent rôle, the characteristic fall in alveolar carbon dioxid is found and gives the same guide for prognosis and treatment as in diabetes.

Of cardiac dyspnea, Peabody finds two principal types. Many cases show a decreased carbon dioxid tension, indicating acidosis, which rapidly disappears with improved circulation. This is explained as being due to the production of acid bodies from incomplete oxygenation of the tissues, owing to the poor circula-

1. Peabody, F. W.: Am. Jour. Med. Sc., 1916, cli, 184.

tion. A second group presents evidence of more serious acidosis together with inefficient renal function. These cases of true cardiorenal disease owe their dyspnea probably to retention or nephritic acidosis. Peabody finds it hard to estimate the exact value of the acidosis in producing this type of dyspnea, but is of the opinion that it is an important element.

Such studies in pathologic physiology mark the present change from the older morphologic methods of studying change in structure. Much is to be hoped from this line of work, and the determination of the alveolar carbon dioxid undoubtedly is a valuable addition to our diagnostic and prognostic armamentarium.

THE AVOCADO—A NUTRITIVE FRUIT

In the dietary of many, if not most, Americans the fruits have won a place quite out of proportion to any nutritive value which these plant products can exhibit in terms of calories of actual foodstuffs. In practically all fruits in the fresh state the content of water is large, and what there is of true nutrients is derived for the most part from the carbohydrates present. In nearly all cases the sugars predominate, starch being present in the thoroughly ripe products only in small amounts. The content of nitrogenous material, estimated as protein, is low, amounting to as little as 0.2 per cent. in some cases, or as much as 2.5 per cent. in others. The stone fruits contain, on the average, less than 1 per cent. The banana forms an exception, to a certain degree, in that it is comparatively rich in actual nutritive substance equivalent to about 450 calories per pound of edible matter, a figure approached by the edible portions of grapes and pomegranates and exceeded by the less common persimmons. In contrast with such food values, equivalent weights of berries, melons or even apples show insignificant figures.

From the foregoing it is evident that fruits are ordinarily added to the diet not primarily because of their richness in energy-yielding or tissue-forming components, but rather because they supply other desired factors. According to one estimate from a large number of data from American dietary studies representative of ordinary food habits in their respective localities, about 8 per cent. of the total cost of the food was due to fruits which supplied less than 3 per cent. of the total calories and less than 1 per cent. of the protein intake.[1] Whatever the value of the fresh fruits in the ration, it cannot be measured primarily in quantitative terms of the ordinary foodstuffs. Desired flavor undoubtedly contributes something to the explanation of the widespread use. The mineral ingredients also have been charged with special value to account for the popularity of the fruits, and the experiments of Blatherwick[2] have made it clear that many fruits possess a potential alkalinity which is utilized in neutralizing acids within the body. This is, of course, contrary to the current conception, which recognizes the presence of organic acids in the fruit juices in abundance, but fails to appreciate that when these are burned up in the organism they yield carbon dioxid, and that thus the surplus of base-forming elements will remain as bicarbonate when these foods are oxidized in the body. Through their organic acids and in larger measure through their content of indigestible cellulose or "roughage," the fruits further exert a wholesome effect on the movements of the alimentary tract. This laxative property is especially valuable under the prevailing conditions of diet, in which there is a tendency toward the use of highly concentrated and completely digestible foods. The indefinite conception as to the real place of fruits in the dietary is expressed in a recent comment by a student of nutrition as follows: The dietetic value of fruit, aside from the actual nutrients which it contains, lies in its succulency — its minerals and organic acids. If gaged by its nutritive value alone, fruit would seem to be an expensive form of nourishment; but when its hygienic qualities are considered, its money value to the consumer is difficult to estimate. Some fruits carry more nourishment with their hygienic properties than others. Some contain minerals which are more valuable to the system or less commonly distributed than others. Therefore, while there are general properties which are common to all fruits, each has special properties which justify individual consideration.[3]

There is a decided element of novelty, therefore, in an available fruit which departs from the conventional varieties by exhibiting a content of nutrients both unlike and greater than that of most species in common use. The avocado is a fruit characterized by containing a very large amount of oil, so that the only comparable product is the olive. The avocado is by no means entirely new in this country, though native to the tropical and semitropical regions of North and South America, where it is used as a common and much prized article of food. It was introduced into California, at Santa Barbara, in 1870; but as yet its scarcity has made the price in our Eastern markets almost prohibitive from the standpoint of any widespread popular use of the fruit.[4] The avocado tree belongs to the laurel family; its fruit varies in form from round to pear-shaped with a short or elongated neck, and in weight from a few ounces to 4 or 5 pounds. It contains a single large seed which is surrounded by yellowish, buttery flesh.

1. Sherman, H. C.: Food Products, New York, The Macmillan Company, 1915, p. 357.

2. Blatherwick, N. R.: The Specific Rôle of Foods in Relation to the Composition of the Urine, Arch. Int. Med., September, 1914, p. 409.

3. Jaffa, M. E.: The Nutritive Value of the Avocado, Bull. 254, Univ. California Agric. Expt. Station, 1915, p. 395.

4. Data regarding avocado culture in California are supplied by Condit, I. J.: Bull. 254, Univ. California Agric. Expt. Station, 1915, p. 381.

Analyses of twenty-eight different varieties of avocado, lately made by Jaffa[8] in the Division of Nutrition at the University of California Experiment Station, show how widely it differs from the average of fresh fruits and prove it to be worthy of serious consideration. The edible portion contains, on an average, less than 70 per cent. of water, 2 per cent. of protein, 7 per cent. of carbohydrate, 1.2 per cent. of mineral ingredients, and no less than 20 per cent. of fat. Some varieties have exhibited nearly 30 per cent. of the latter ingredient. Olives do not exceed this. Such data, put into terms of energy units, show that the edible part of the avocado corresponds to about 75 per cent. of the fuel value of the cereals, and is not far from twice that noted for average lean meat. They explain, furthermore, why the flesh of the avocado has been termed a "vegetable butter." From the earliest records up to the present time the flesh of the avocado has been described as a natural mayonnaise and is often eaten as taken from the fruit, without additional preparation. The natives of Mexico often spread the pulp on their black bread in place of butter.

The evidence for the dietary value of the avocado is still essentially empiric. Chemical analysis alone is by no means adequate to establish the right of a new food product to a permanent place in the national dietary. Although no metabolism experiments have been carried on in connection with the avocado, Jaffa reminds us that it is only fair to assume that this fruit is as easily digested as many others whose coefficients have been determined. Such data clearly prove that the fruits are quite thoroughly digested. Although the availability of the protein is less, the digestion coefficients of the carbohydrates compare favorably with those obtained for the mixed diet, while those of the oils and mineral matter are fully equal to them. Meanwhile the enterprise of our American fruit industry must see to it that the present price of from $4 to $8 a dozen is reduced so that this little known fruit may become popular enough to be tested. The trees are prolific, and the possibility of successful marketing seems almost assured.

The Doctrine of Insect-Borne Diseases.—The doctrine of insect-borne diseases is a singular revival, under the egis of science, of the crude and direct notions of the people. They believed in the action of disease through the external surface of the body, as is implied in the idea expressed in the word contagion. Thus we find in the Homeric legend, Apollo aiming afar his shafts to spread contagion in the Grecian hosts, and later on, in the middle ages, we meet with the popular credence in ointments as the cause of the spread of plague. The discoveries made in recent years of various infections conveyed by insects have confirmed these views, establishing an extensive and remarkable group of diseases introduced through the skin: filaria, yellow fever, malaria, plague, trypanosomiasis, the spirilloses, uncinariasis, leishmaniasis, all among the most important diseases that affect man.—Dr. Juan Guiteras, address before the Pan-American Scientific Congress, 1916.

Current Comment

DEATH OF DR. RODMAN

The announcement of the death of Dr. William L. Rodman, President of the American Medical Association, which was briefly made last week, came as a shock to our readers. He had been unusually active during the last few months, and had come in contact with a great many members of the profession. He had spent much time in visiting and addressing medical meetings, and in promoting the new National Board of Medical Examiners. Dr. Rodman had been active in the affairs of the Association for many years. In 1897 he was chairman of the Section on Surgery, presiding at the Denver meeting; in 1900 he delivered the oration in surgery on gastric ulcer. He was a member of the Board of Trustees from 1900 to 1903. He was a member of the House of Delegates from Pennsylvania in 1905-1906; a member of the Committee on National Legislation for many years, and for seven years chairman of the Committee on Reciprocity, until the work of this committee was turned over to the Council on Medical Education. It was during the time that he was chairman of this committee that he became interested in the plan for a voluntary national licensing board. The ambition of years to see such a board organized was practically realized, as the board was on a permanent basis at the time of his death. Dr. Rodman took a deep interest in various matters of public welfare. He was interested in the work of reorganization of the medical department of the army and the strengthening of the preliminary requirements in the practice of medicine, in the American Society for the Control of Cancer, and during the last few months in medical military preparedness. This, we believe, is the first time that a President of the Association has died during his term of office. The By-Laws provide that in case of the death of the President the vacancy shall be filled by the ranking Vice President. Therefore Dr. Albert Vander Veer of Albany, N.Y., will complete Dr. Rodman's term as President.

WORM OVA IN FLIES

Observations made at the Mombasa Hospital of the British East African Medical Service on persons attached to the expeditionary forces involved in the European war showed that patients assigned to the surgical wards, after varying intervals, contracted bowel troubles which were found to be due to intestinal parasites. An examination of 100 natives of indigenous races, admitted into or attending the hospital, complaining of intestinal troubles, had earlier shown evidencs of helminthic disease in 83 per cent. of the cases. The most frequently found ova of parasitic worms were those of *Ankylostoma duodenale, Ascaris lumbricoides,* and tapeworm, multiple infections being very frequent. This combination of circumstances placed the flies frequenting these wards under suspicion. An investigation conducted by medical officer Shircore[1] showed that a considerable number of the flies actually harbored ova. Inasmuch as the flies are

readily captured and can be preserved and subjected to examination subsequently, when opportunity is afforded, Shircore suggests that this plan offers a method whereby prevalence of helminthiasis may be determined in a locality where it is either difficult or impossible to obtain fecal matter for examination.

THE WINE OF CARDUI SUIT

Next week what promises to be one of the most important lawsuits of its kind will be opened in the federal courts at Chicago. Technically the case is the Chattanooga Medicine Company *vs.* the American Medical Association and the editor of THE JOURNAL. In its far-reaching effects the case might be described as the "Patent Medicine" Interests *vs.* The Public Health. Out of the dozen or more suits filed against THE JOURNAL and the Association during the past ten years this will be the only one that has ever come to trial. It will give the Association the long-sought opportunity to present the facts regarding at least one phase of the worthless "patent medicine" business, and it is hoped will afford the Association an occasion to show what it has done, is doing, and intends to do, to protect the public against medical imposition and deception. There are few physicians, we imagine, who do not know in a general way of the action brought by the manufacturers of Wine of Cardui. Since the suits were commenced the enormous power and influence of almost unlimited wealth have been evident. The medicine company has, during the last year and a half, taken hundreds of depositions through the South largely from women who claim to have been cured or benefited by the use of Wine of Cardui. Not a few of these depositions, however, have been from men who have the legal right to put "M. D." after their names. The conception these persons had of their duty to the public health was such that they were willing to lend the weight of their professional influence, such as it is, to bolstering up the worthless "patent medicine" business. It is true that many of these physicians who have thus stultified themselves are, or have been, also in the drug business and thus beneficiaries of the "patent medicine" trade. The tens of thousands of dollars which have been necessarily expended in taking these depositions but feebly represent the power wielded by the nostrum fraternity. In the recent trial at Chattanooga, where the Wine of Cardui concern brought suit against the president of the Louisiana State Board of Health for exhibiting in the State "Health Train" a poster declaring the preparation fraudulent, the baneful effect of "patent medicine" influence was shown. It was brought out on the witness stand that after the poster referred to was displayed at Chattanooga a high official of the railroad over which the train was being carried brought pressure to bear to have the placard removed from the exhibit on the plea that it was detrimental to the interests of their Chattanooga patrons! The — ostensibly — free transportation this railroad had offered in the interests of the public health apparently had a very definite "string" to it. When the health authorities of a commonwealth find it imperative to shape their educational work to meet the demands of the "patent medicine" interests, cracking the whip through public-service corporations, it is about time that attention is called to these facts. It may be expected that the newspapers will contain reports on the progress of the case, which will doubtless extend over some weeks. Remembering the millions that are spent every year in "patent medicine" advertising — and during the last year the amount has apparently been enormously augmented, for reasons more or less obvious — some newspapers may color their reports to favor their advertisers: "Whose bread I eat, his song I sing!" Fortunately the daily press, generally, is no longer under the blight of the "red clause" of the "patent medicine" advertisers. There are many high-grade papers throughout the country which may be expected to handle the case without fear or favor.

1. Shircore, T. O.: A Note on Some Helminthic Diseases with Special Reference to the Housefly as a Natural Carrier of Ova, Parasitology, 1916, viii, 239.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ILLINOIS

Personal.—Dr. E. Joe McEntire, Erie, has been under treatment in the Presbyterian Hospital, Chicago.——Dr. James A. Cline, Joliet, underwent operation for disease of the throat at Wesley Hospital, March 7.——Dr. Theodore H. Trappe, Hecker, was thrown from his horse while making a professional call, February 21, and sustained severe bruises.

The Contagious Disease Situation.—Dr. C. St. Clair Drake, secretary of the state board of health, issued a warning, March 1, to local health authorities in view of the spread of communicable diseases in the state. The communities most seriously infected by smallpox are said to be Peoria and vicinity, Staunton, Decatur, Springfield and the counties of Woodford and Fayette.——At Peoria there are seventy-seven cases of scarlet fever and twenty-four of smallpox. The scarlet fever situation is improving.——Rockford reports sixty cases of scarlet fever, nine cases of diphtheria, and that measles is prevalent.——At Shelbyville, 110 houses are under quarantine for measles.

Chicago.

Municipal Health Journal.—Health Commissioner Robertson announces that the initial number of the municipal health journal will appear **April 1.** It will be known as *Clean Living.* Dr. Robertson plans to issue 100,000 copies for free distribution through schools and other channels.

Alienists and Neurologists to Meet.—Dr. William T. Mefford, secretary of the conference, announces that the fifth annual meeting of the Alienists and Neurologists of the United States will be held at the LaSalle Hotel, Chicago, June 19 to 23, under the auspices of the Chicago Medical Society.

Personal.—Dr. and Mrs. Edmund Andrews have returned from Florida.——Dr. and Mrs. Casey A. Wood are visiting in California.——Dr. Edwin O. Jordan has been appointed chairman of the committee on sanitation and hygiene of the University of Chicago, and Dr. Dudley Billings Reed has been appointed health officer.——Dr. Frank E. Hansen, ambulance surgeon at the Shakespeare Avenue Station, was seriously injured in a collision between the ambulance and a street car, March 8.——Dr. G. E. Wright has resigned as superintendent of the Isolation Hospital.——Dr. John A. McGill, retiring president of the Illinois St. Andrews Society, was given a dinner by the Scotsmen of Chicago, March 1.

FLORIDA

Personal.—Dr. William A. Claxton, Jacksonville, has been assigned to duty in the hospital corps in Egypt and has started for Alexandria.——Dr. Lyman G. Haskell has been elected second vice chairman, and Carroll H. Frink, secretary of the Jacksonville chapter of the American Red Cross.

Medical Library for Society.—The Hillsboro County Medical Society is planning the establishment of a comprehensive reference library in Tampa for the use of its members, and a committee has been appointed to make arrangements for the collection of subscriptions from physicians of the city for the purchase of books and subscriptions to medical periodicals. The society also has asked the city council to provide a place for the medical library in the public library building.

MARYLAND

Carolina Surgical Club at University.—The Hospital of the University of Maryland held a series of clinics, March 2, before the North Carolina Surgical Club, after which a luncheon was tendered to the visiting surgeons.

Health Meeting.—The third of a series of public health meetings was held at Catonsville, under the direction of the Medical and Chirurgical Faculty of Maryland, and the Women's Civic League of Catonsville, March 10. Lectures on "Child Welfare" were delivered by Dr. Mary Sherwood, Baltimore; Dr. Samuel J. Fort, Catonsville, and Dr. Albert L. Wilkinson, Raspeburg. Motion pictures were also shown in connection with the lecture.

Personal.—Dr. William Burgess Cornell, executive secretary of the Mental Hygiene Society of Maryland, has resigned to become medical director of the New York City Hospital and School for Children, Randall's Island.——Dr. Charles B. Thompson, at present on the staff of the Henry Phipps Psychiatric Clinic, Johns Hopkins Hospital, has been selected to succeed Dr. Cornell as executive secretary of the Mental Hygiene Society.——Dr. James H. Billingslea, Westminster, is at the Presbyterian Ear, Eye and Throat Hospital for treatment for cataract.——Dr. Harry F. Shipley, Granite, is undergoing treatment at the Mercy Hospital.——Dr. Walter E. Dandy, assistant surgeon at Johns Hopkins Hospital, has been appointed resident surgeon, succeeding Dr. Roy D. McClure, resigned to become assistant surgeon of the new Henry Ford Hospital, Detroit.——Dr. Grover A. Stem, Westminster, has returned after several months' service with the American Red Cross in the war zone.

Annual Health Conference.—The Sixth Annual Health Conference of the Medical and Chirurgical Faculty was held in Baltimore, March 6 to 11, and proved one of the most successful conferences ever held. The attendance at all the meetings has been most gratifying. The program was as follows:

March 6: "The Relation of Preventive Medicine to Child Welfare," Dr. William H. Welch.

March 7: "Relation of Heredity to Child Welfare," Dr. Adolf Meyer. "Prenatal Care," Dr. Alice Weld Tallant, Professor of Obstetrics, Women's Medical College, Philadelphia.

March 8: "Midwifery," Dr. John W. Williams. "Midwifery Conditions in Maryland," Dr. Fred V. Beitler, Halethorp.

March 9: "Infant Welfare," Dr. James H. M. Knox, Jr. "The Babies of China," Dr. Mary J. Stone.

March 10: "Nutritional Diseases of Babies," Dr. Charles W. Mitchell. "Infectious Diseases of Babies," Dr. Charles O'Donovan. "Economy and Efficiency from an Oral Hygiene Standpoint," Dr. Herbert L. Wheeler.

March 11: "What a City Should Do With or For Day Nurseries," Miss Anna W. Kerr, Department of Health, New York. "The Kindergarten in Relation to the Physical Welfare of Children," Miss Patty Hill, Professor of Kindergarten Education, Columbia University.

There were motion picture exhibitions every evening from 8 to 8:30 p.m. and the health exhibit was open daily.

MISSOURI

Changes at State Hospital No. 2.—Dr. Collis I. Roundy, St. Joseph, has been appointed a member of the medical staff.——Dr. John A. Postlewait, Tarkio, has resigned as president of the board of trustees.——Dr. William L. Whittington, St. Joseph, has been appointed superintendent, succeeding Dr. George R. Thompson.——Dr. Amos T. Fisher has resigned as pathologist, and Dr. Ray O. Lieuallen, as a member of the staff of the hospital.

Personal.—Dr. Arthur L. Anderson, Springfield, retired president of the Greene County Medical Society, was the guest of honor at a dinner given by the society, February 25, over which Dr. Joseph W. Love, Springfield, presided as toastmaster.——Dr. Joseph S. Summers, Jefferson City, suffered $2,000 damages by a fire in his office, February 24.——Dr. George Dock, St. Louis, delivered an address, March 2, before the physicians of Jacksonville, at the public library, on "The Relation of the Medical Library to the Public."

Sanatorium Notes.—Drawings have been prepared by Kansas City architects for the new $100,000 tuberculosis sanatorium for Jasper County. The site for the hospital and the decision on the plans will be decided this month.——A permanent organization looking to the relief and control of tuberculosis in Greene County was effected, February 16, at a meeting held in Springfield. The charter membership includes about fifty members of the Greene County Medical Society, Springfield Graduate Nurses' Association, Springfield Visiting Nurses' Association, and others. The first official act of the association was the proposal for an election to vote bonds of $50,000 to erect and maintain a sanatorium for tuberculosis in Greene County.

NEW YORK

The Fronczak Dinner.—A complimentary dinner was given by members of the medical profession of Buffalo, March 15, at the Hotel Stattler, to Dr. Francis E. Fronczak, the first appointed health commissioner under the new commission form of government. Dr. F. Park Lewis officiated as toastmaster. The speakers included Drs. John C. MacEvitt, Brooklyn; Deputy State Health Commissioner Dr. Linsly R. Williams, Mayor Louis P. Fuhrman, and others. Dr. Fronczak requested that instead of a token of esteem being given to him, the equivalent in money might be presented for the benefit of suffering humanity and suggested the American Red Cross as the most worthy recipient of this donation.

Roe Memorial Meeting.—A special meeting of the Rochester Academy of Medicine will be held, March 29, as a memorial to the late Dr. John Orlando Roe at which Dr. Joseph R. Culkin, president of the Academy, will give an outline sketch of Dr. Roe's life; Dr. Eugene H. Howard will present the report of the committee on resolutions; a portrait of Dr. Roe will be exhibited and accepted by the president in behalf of the academy; Dr. Bradford A. Richards will present a paper on "The Scientific Contributions of Dr. Roe" followed by a discussion and personal reminiscences, and Dr. Wendell C. Phillips, New York, will close with an address on "John O. Roe as a Scholar and Man, His Personal Characteristics and Worth."

Personal.—The Medical Advisory Board of Niagara Falls Memorial Hospital, on March 3, presented Dr. William H. Hodge with a loving cup. Dr. Hodge was organizer of the board in 1905, and has served as a member ever since and several years as chairman of the board.——Dr. James D. V. Sheehan, Syracuse, has been appointed vaccinator succeeding Dr. Juliet E. Hanchett.——Dr. John H. Benjamin, Riverhead, is reported to be ill in Dr. Pilcher's Private Hospital, Brooklyn.——Drs. John and Edward S. Van Duyn and Daniel F. Luby, Syracuse, leave for the war zone this month and will be on duty with Auxiliary Hospital No. 43, located at Dieppe, France.——Dr. Willard J. Denno, New York, now secretary of the state department of health, has been appointed secretary of the State Board of Medical Examiners.

New York City

New Charities Bulletin.—The commissioner of the Department of Public Charities of New York announces that nine hospitals of the department are about to publish a medical bulletin to be known as the "Hospital Bulletin of the Department of Public Charities."

Columbia Medical School Open to Women.—The trustees of Columbia University, at their last meeting, decided to admit women to the medical school as soon as the equipment made the step practicable. Five years ago women were admitted to the summer sessions. The entire enrolment of the medical school at present is 373.

Hospital for Wall Street District.—Application was made recently to the secretary of state for a charter for the new Broad Street Hospital. It is announced that sufficient funds have been subscribed by individuals and firms in the Wall Street district to insure the continued service of the hospital to the 1,500,000 people of the downtown section of Manhattan.

Personal.—Dr. Joseph A. Blake has been made chief of the surgical center in the Department of the Seine and Oise. This promotion is the first of its kind to be con-

ferred on an American surgeon in the service of France. It places Dr. Blake in direct control of six military hospitals. ——Dr. and Mrs. Donald B. Armstrong, Stapleton, S. I., have been awarded the $1,000 prize offered by the Metropolitan Life Insurance Company for the best pamphlet on social hygiene for boys and girls.——Dr. William B. Giles returned, February 24, after eight months' service in the French military hospitals.——Dr. Frank H. Lasher, Brooklyn, had two ribs fractured in a collision between his automobile and a wagon, February 25.

Semicentennial of Health Department.—The New York City Health Department celebrated the fiftieth anniversary of its establishment with a banquet at the Plaza Hotel, March 9, at which Health Commissioner Haven Emerson presided. Mayor Mitchell spoke on "The Health Department's Place in the City Government"; City Chamberlain Bruere on "The Future of the Health Department"; State Health Commissioner Hermann M. Biggs on "The Scientific Control of Infectious Diseases"; Dr. Walter B. James, president of the New York Academy of Medicine, on "The Medical Profession and the Public Health"; Dr. William H. Welch of the Baltimore Children's Hospital on "National Importance of Preventive Medicine," and Dr. Stephen Smith, a member of the original City Board of Health, on "Development of the Health Department as Seen by a Pioneer." Greetings from Canada were presented by Dr. Bryce.

NORTH CAROLINA

New Equipment for State Laboratory.—The state laboratory of hygiene, operated under the direction of the state board of health as one of its divisions, has recently been provided with new equipment, and it is expected to be able to offer the profession of the state better facilities for the free examination of throat secretions for diphtheria, sputum for tubercle bacilli, feces for hookworm, blood for the malarial plasmodium, etc.

Operation of New Medical Statute.—Under the first six months of the operation of the new state medical statute (taking effect July 1, 1915), transferring the authority for prosecutions of the state medical license practice laws from the local counties to the office of the attorney general at Raleigh, who on complaint of the state board of medical examiners, directs the solicitor to bring prosecutions, twelve unlicensed physicians have left the state to evade prosecution, and three have been prosecuted and convicted in the courts.

Polyclinic Organized.—The St. Agnes' Polyclinic has been organized at Raleigh in connection with St. Agnes' Hospital for Colored People. Dr. Jennie A. Duncan is resident physician and superintendent of nurses, and Dr. Lemuel T. Delany, assistant resident physician. The management of St. Agnes' Hospital, in announcing the organization of the polyclinic, invites all regular physicians to attend free of charge, and expresses the hope that the polyclinic will prove of interest to the physicians of the surrounding territory who may now be able to attend systematic clinics to be appointed for their convenience.

OHIO

Polish Doctors Organize.—Polish physicians of Cleveland have organized a local branch of the Polish Physicians' Union, with an initial membership of sixteen. Dr. Walter Peters was elected president; Dr. Frank J. Kuta, vice president, and Dr. Ignatius M. Jarzynski, secretary-treasurer.

Personal.—Dr. Arthur G. Hyde, acting superintendent of the Cleveland State Hospital for eighteen months, was appointed superintendent, March 1, succeeding Dr. Charles H. Clark, transferred to the Lima State Hospital.——Dr. John G. Frey, Cleveland, has been appointed neurologist in charge of the new Eugenic Laboratory of Cleveland.——Dr. Clarence D. Selby has been appointed commissioner of public health of Toledo, succeeding Dr. Daniel W. Iford, resigned. ——Drs. Willard J. Stone and John T. Murphy, Toledo, participated in the program of the Hardin County Medical Society at Kenton, February 29.——Dr. Charles E. Sawyer, Marion, has been appointed a member of the state medical board, succeeding Dr. T. Addison McCann, Dayton, term expired.

Cincinnati

Personal.—Dr. James M. Bentley has been appointed junior visiting physician to the contagious group of the Cincinnati General Hospital.——Dr. Georges Rasetti, who served for several years on the western front with the French army, was transferred to Bonaki, Occidental Africa, December 15.—— Dr. Thomas W. Hays, who has been ill at the Betts Street Hospital for several weeks, is reported to be convalescent.

Diphtheria.—An epidemic of diphtheria is stated to exist in the Twenty-Second Ward where thirty-seven out of eighty-five known cases in the city have been reported. The houses are placarded and every precaution to check the spread of the disease is being taken.——A formal complaint has been lodged by Health Officer John H. Landis and Assistant Health Officer Peters, with the State Board of Medical Examiners, against the method of a Cincinnati physician in treating diphtheria. This practitioner is stated to be opposed to the use of antitoxin and to have advised his patients and their families that the use of this agent was harmful rather than beneficial.

OKLAHOMA

Hospital Notes.—The new Woodward Hospital, which was opened by Dr. and Mrs. Clinton M. Tracy, January 13, is building an addition of sixteen rooms.

Smallpox in Oklahoma City.—At Oklahoma City, all the pupils of the high school were ordered to be vaccinated on account of the presence of smallpox, and the presence of the disease in one of the teachers. Two pupils refused to comply with the order and were ordered to remain out of school for thirteen days.

New District Society.—Dr. Garraed P. Cherry, Mangum, recently called a meeting of physicians of the counties comprising the third councilor district and organized a district society. Dr. Sam H. Landrum, Altus, was appointed secretary, and the next meeting will be held at Altus, April 5. The society will hold clinical meetings quarterly.

Personal.—Dr. Albert C. Hirshfield, Norman, who has returned after a year of service with the Russian Army, will locate in Oklahoma City.——Dr. Clinton M. Maupin, Waurika, has been appointed health officer succeeding Dr. Roscoe G. Dixon, Sugden, deceased.——Dr. James J. Williams, Weatherford, has been appointed a member of the State Board of Medical Examiners, succeeding Dr. Le Roy Long, Oklahoma City.——Dr. George D. McLean, Oklahoma City, has returned from service with the British Army in France.

PENNSYLVANIA

New State Hospital Wanted.—The state board of charities, at its meeting in Harrisburg, March 8, advocated the erection of a new hospital for the insane, the establishment of a home for those suffering from incurable diseases and the completion of the village for feebleminded women at Laurelton.

Philadelphia

Dermatologists Seek Charter.—A petition for a charter was filed, March 1, in the Common Pleas' Court, by Drs. J. F. Schamberg, J. M. Kolmer, David Riesman and Albert D. Ferguson, for the incorporation of a Dermatological Research Laboratory, the object as stated being "for the promotion of scientific research into the cause and care of skin disease and every other disease of cognate character."

Medical Conditions of South Philadelphia.—"The Medical Conditions of South Philadelphia" will be discussed by Director Krusen and others at a combined meeting of the South Branch of the Philadelphia County Medical Society and the South Philadelphia Business Men's Association at a meeting, to be held March 27. This will replace the stated meeting of the branch society scheduled for March 24.

Indictments in Antidope Crusade.—Twenty indictments against persons accused of violating the Harrison Narcotic Law were returned, March 10, by the federal grand jury. This makes a total of fifty-eight indictments returned by the grand jury since March 6. Of the number returned March 10, nine are against dealers and two are against physicians. The specific charges against physicians are that they furnished prescriptions for narcotics to dope victims who were not under their observations as patients taking a cure for the habit.

Personal.—Dr. Alonzo E. Taylor, Rush Professor of Physiological Chemistry at the University of Pennsylvania, sailed March 11 for Germany where he will engage in Red Cross work as an attaché of the American Embassy at Berlin. ——Dr. Francis V. Gowen sailed, March 11, for Bordeaux, France, and will be attached to a military hospital at Beaumont, Périgord.——Friends of Dr. John W. Dick gave him a testimonial banquet, March 6, to commemorate the beginning of his fiftieth year of active medical practice. Dr. Empson H. Bainbridge presented Dr. Dick with a gold stick pin bearing the numerals "50" and he also received other presents.——Dr. Daniel J. McCarthy has been appointed by

the president as an American agent to study German prison camps, and sails for Germany this week.——Dr. William J. Ryan has been appointed assistant ophthalmologist to the Philadelphia General Hospital.

WISCONSIN

Communicable Diseases.—An epidemic of scarlet fever is said to exist at Racine, where sixty cases have been reported. ——A death certificate received by the health officer of Milwaukee, March 1, gave the cause of death as typhus fever, the first death from this disease reported in Milwaukee since 1912.

Typhoid Fever.—On March 4, eleven new typhoid cases were reported in Milwaukee, making a total of 261, with twelve deaths.——The secretary of the school board has bought 500,000 paper drinking cups for the use of schoolchildren. All drinking water in the schools is thoroughly boiled.——The City Council of Milwaukee, on March 2, appropriated $10,000 as an emergency fund to be at the disposal of Health Commissioner Ruhland for use in halting the spread of typhoid fever.——Dr. Cornelius A. Harper, state health officer, Madison, was in Milwaukee, March 2, to study the typhoid situation.——Six physicians have been appointed to administer antityphoid inoculation to all persons in homes in which typhoid fever exists.——Several men employees of the dam construction work on the Mississippi River at Genoa have been stricken with typhoid fever.——The State Hygienic Laboratory, Madison, has manufactured sufficient serum for the antityphoid inoculation of several thousand persons.

CANADA

Aesculapians Elect.—The Aesculapian Club, Toronto, closed its meetings for the season of 1915-1916 on March 9. Dr. Charles J. C. O. Hastings was elected president; Dr. William Goldie, vice president; Dr. George Elliott, secretary, and Dr. Edmund E. King, treasurer.

Compensation Act.—The Medical Council of Ontario is seeking suggestions from the medical profession as to changes in the Ontario Workmen's Compensation Act. At the present time the physician attends the injured, makes out the papers for the presentation of his chaim, receives no remuneration from the employer, nor from the compensation board, and it is said, not much from the injured.

Tuberculous Conferences.—The City Health Department, Montreal, held a series of conferences during 1915 in its campaign against tuberculosis and infant mortality which were attended by over 26,000 people. Altogether 147 lectures were given and it has been decided to continue these conferences during 1916. Montreal has fourteen public baths under municipal direction. These are available to women on certain days of the week.

Personal.—Lieut.-Col. Robert M. Simpson, M.D., Winnipeg, who was placed under arrest while on active service in France, may be brought back to Winnipeg under military orders. He is charged with complicity in the Manitoba Parliament Building frauds.——Lieut.-Col. Arthur E. Ross, M.P.P., Kingston, Ont., who was offered the command of the Ontario Military Hospital, recently opened at Orpington, England, has declined to accept the position.

GENERAL

Sanitary Convention.—The fourth annual meeting of the Southern Sanitary Association will be held at Brunswick, Ga., March 23 and 24.

Michel Receives Medal of Honor.—Assist. Surg. Carl Michel, U. S. P. H. S., has been awarded a silver medal of honor by the secretary of the treasury in recognition of his efforts to save a man from drowning at El Condado Beach, San Juan, P. R., Nov. 27, 1915. Surgeon Michel swam, at the risk of his life, through a heavy surf breaking over a coral reef in an endeavor to save the man who was struggling in the heavy breakers and who was being swept out to sea.

Study of Criminal, Pauper and Defective Classes.—The establishment in the Department of Justice of a bureau for the study of the abnormal classes is provided for in a bill introduced by Senator Robinson of Arkansas. The work is to include both laboratory investigations and the collection of sociologic and pathologic data, especially such as may be found in institutions for the criminal, pauper and defective classes. Cooperation with state and municipal and other officials of this and other countries is authorized.

Mortality Statistics to be Regulated.—If a bill introduced by Representative Watkins of Louisiana be enacted, the Federal Census Bureau, in compiling mortality statistics, will make a separate tabulation and rating of the white and the colored races and the mortality rates of cities will be based on the deaths of actual residents only. The death rates of nonresidents are to be kept separately. What shall constitute a "resident" within the meaning of the law is specifically assigned to the Census Bureau for determination.

A Warning.—Dr. Frank B. Reagor of Shelbyville, Tenn., writes to THE JOURNAL asking that a warning be published against John Mack, who claims to represent the Ohio Service Co. of Cincinnati, and who is selling automobile supply service at $10. Dr. Reagor states that mail addressed to this company at Cincinnati is returned with the notation that there is no such concern in that city. In THE JOURNAL for March 4, 1916, p. 748, under the heading Kentucky News, a warning was published concerning a similar scheme used by a man who gave his name as L. A. McCoy.

Sociologic Congress.—The Sociologic Congress will hold its annual session in New Orleans, April 12 to 16, and the convention will really consist of eleven conferences which will meet separately during the morning, all coming together in the afternoon and evening for general session. The special subjects for conference are "The Government and Health"; "The School as the Conserver of Health"; "The Medical Profession in the Fight With Public Health"; "The Press as the Champion of Public Health"; "Race Relations," and "The Church as the Guardian of the People's Health." There will also be conferences on law and order, the teaching of sociology in Southern schools, travelers' aid, temperance and other vital sociologic topics.

Belgian Scholarship Committee.—The Belgian Scholarship Committee, which was founded about a year ago in Washington to collect money for destitute scholars, is now broadening its scope. Its aims are at present to give to Belgian scholars, artists and writers every chance to resume their work in arts or sciences and to raise a fund for the reconstruction of a new and better Belgium, especially in the educational field. The committee makes an appeal for promises of books to be shipped to Belgium as soon as circumstances permit and suggests that libraries, educational institutions and learned societies send the committee a list of the books they are willing to give to Belgium. Thus it will be possible to offer Belgium, soon after the cessation of hostilities, a library of books published in America or relating to American affairs. The committee also appeals for money to help Belgian scholars and artists and to carry on its activities. Associated members of the Belgian Scholarship Fund agree to subscribe at least $10 a year; sustaining members at least $100 and fellows $1,000. Checks should be drawn to the order of John Joy Edson, treasurer, and transmitted to the Belgian Scholarship Committee, 309 Wilkins Building, Washington, D. C.

Prohibition of Guaranty Legend on Food and Drug Labels.—The difficulty encountered in undertaking fairly and effectually to carry out the spirit and intent of the Federal Pure Food Law of June 30, 1906, was clearly shown in a public hearing held by the Bureau of Chemistry, Department of Agriculture, in Washington, March 10. The purpose of the hearing was to discuss the necessity of a further postponement of the date when the order forbidding the use of a guaranty legend on the labels and pakages of foods and drugs should be discontinued. The hearing was attended by representatives of the National Canners' Association, the National Wholesale Druggists' Association, the National Retail Druggists' Association, the National Drug Trades Conference and the National Association of Manufacturers of Medicinal Products, and by representatives of establishments engaged in the manufacture of labels and containers of food and drug products. At the close of the hearing the Board of Food and Drug Inspection, before which the hearing was given, took the matter under advisement.

It will be recalled that the secretary of the treasury, the secretary of agriculture and the secretary of commerce are authorized by the Pure Food Law to make regulations for carrying the law into effect. By the regulations as first promulgated it was provided that a general guaranty might be filed with the secretary of agriculture by any manufacturer of or dealer in drugs and food products who desired to assume full responsibility for the purity and correct labeling of his product even in the possession of other dealers; that each guaranty so filed should be given a serial number, and that every package of goods sold under such guaranty should

contain on the label the serial number so given and the words "Guaranteed Under the Food and Drugs Act, June 30, 1906." Attempts were soon made, however, by unscrupulous persons, through advertisements in the press and by circulars and billboard posters, to cause the public to interpret the phrase as a guaranty not by the manufacturer but by the government itself; and the Commissioner of Patents found it necessary to refuse to register trademarks of which the guaranty clause formed a part, on the ground that the phrase was misleading and under the law could not be registered. The regulation was, therefore, amended by the three secretaries, to take effect Jan. 1, 1909, so as to require that the name of the guarantor form a part of the guaranty legend, as follows: "Guaranteed by (insert name of guarantor) under the Food and Drugs Act, June 30, 1906"; but the amendment provided that two years should be allowed within which to use up old labels and plates and to provide new ones.

The amendment to the regulations that required the name of the guarantor to appeal in the guaranty legend did not accomplish the desired end, and on May 5, 1914, the filing of general guaranties and the assignment of serial numbers were discontinued, and the use of any guaranty legend on the label or package was forbidden, to take effect May 1, 1915. Subsequently the date when this amendment was to take effect was postponed until May 1, 1916, with the further proviso that products packed and labeled prior to that date in accordance with the old regulations might be sold up to Nov. 1, 1916. It was because of the approach of the dates when the prohibition of the use of the guaranty legend and of the sale of goods bearing it will become effective that this hearing was given.

Statements were submitted on behalf of the various interests represented at the hearing to show the extent, nature, and value of the stocks of labels still on hand, notwithstanding that no new labels had been ordered bearing the guaranty legend since the use of such labels had been forbidden by the amendment of May 5, 1914. The labels still in the possession of one of the large packing houses was said to be worth approximately $42,000, although three quarters of the entire product of the concern is now going out under labels conforming to the new requirements. Labels for standard goods are ordered in the largest practicable quantities from motives of economy and convenience; and by reason of crop shortages, which limit the volume packed, and of variations in the demand, a given edition of labels may last much beyond the expected time. Manufacturers of labels pointed out the difficulties in the way of canceling the guaranty legends on labels already printed, and the expense involved; and on behalf of canners and manufacturers of drugs it was alleged that the canceling of the guaranty on a label would give rise, in the mind of a possible purchaser, to the idea that the guaranty had been withdrawn on account of some impurity or deterioration in the goods. To enforce the discontinuance of labels already on hand and the change of labels on outstanding stocks of goods in the hands of jobbers and retailers would, it was claimed, not only cause a very great money loss but also lead to a great amount of confusion and trouble. On behalf of the National Association of Retail Druggists, it was urged that the presence of a guaranty legend on the label afforded a real and convenient protection to the retailer, and that no instance of fraud arising out of the legend was known to the association. The manufacturers, however, claimed that to them the guaranty legend was of no value legally or commercially, although some of them might desire to keep it on their labels from sentimental reasons. On behalf of one manufacturer it was contended that the government could not lawfully forbid the use of a guaranty legend on a label, unless the legend used could in fact be shown to be false and misleading, and inquiry was made as to whether the government would agree to a test case or agree to expedite a case so as to have the courts determine this point. Both suggestions were met with the statement that the government never agreed to test cases and that it could not undertake to expedite any other case that might be brought. The manufacturers and dealers asking the further postponement of the time when the use of the guaranty legend would become unlawful suggested no specific date for such postponement, but desired to be allowed if possible to use up all stocks of labels now on hand, regardless of the length of time required for that to be accomplished. It seemed to be the opinion of those manufacturers and dealers who were present that such an extension of time would work no injustice to such manufacturers and dealers as have already arranged to comply with the regulation within the time stated, the opinion being that the presence of the guaranty legend on a package did not stimulate its sale. An opportunity was given any one opposed to an extension of time to protest, but no one appeared.

FOREIGN

Merger of Madrid Exchanges.—The *Siglo Medico* has taken over the *Revista Clinica de Madrid* which has just closed its eighth volume. The *Siglo Medico* thus enters its sixty-third year with a more than doubled editorial staff and the backing of the *Revista*.

Precautions at Matamoras.—The health authorities at Matamoras, Mexico, opposite Brownsville, Texas, have adopted energetic measures to prevent typhus fever from entering the United States at this point. At the railway station a fumigation plant and gasoline bath equipment have been established, and every passenger arriving from points as far inland as Monterey is thoroughly fumigated and his clothes treated by gasoline before being permitted to make application for entry to the American immigration authorities.——The city officials of Matamoras have arranged for a house-to-house vaccination campaign against smallpox, and three physicians have volunteered their services for this work.

Deaths in the Profession Abroad.—R. Benavides, professor of obstetrics at the University of Lima, Peru, from 1865 to 1911, president of the Academia Nacional de Medicina for several terms, aged 84.——L. Comenge, chief of the public health service of the Barcelona district of Spain and writer on medical subjects and on the history of medicine. He is credited with having fought off the plague from Spanish possessions.——S. Stocker-Steiner of Lucerne, Switzerland, died suddenly from heart disease, aged 67. He took a leading part in the organization of the profession and in public health matters, the installation of a public water supply at Grosswangen being one of the innovations credited to his efforts.——C. Girard, professor of surgery at the University of Geneva, Switzerland, and chief of the surgical clinic, aged 66.

Our Foreign Exchanges.—The file of contents of the weeklies in foreign languages, published regularly in our Foreign Current Literature Department, is now complete for 1915 for the *Presse Médicale* and the *Bulletin de l'Académie de Médecine* of Paris, and for the *Berliner, Deutsche, Münchener* and *Wiener Wochenschrifts*, the weekly *Tijdschrift* from the Netherlands, one Swiss, three Italian and two Danish weeklies. Only one number is missing to make the file complete of the *Medizinische Klinik*, the Russian weekly *Vrach*, from Petrograd, the *Semana* from Buenos Aires, and the *Brazil Medico* from Rio. The weekly Zentralblatts for gynecology, surgery and internal medicine, from Leipzig, all stopped abruptly with the issue for Nov. 20, 1915. Some of the monthlies from the various countries show several gaps, as is evident in the Current Literature Department, but the three Scandinavian monthlies and a number of the French and German have been completely indexed. The showing in our Foreign Current Literature Department through 1915 thus testifies to excellent postal arrangements in the belligerent and adjacent countries even through the war. Some of the French monthlies finished late in 1915 the volume begun in 1914. One issue of the *Revue de* Chirurgie, for example, bore the date "Aug. 1914-Nov. 1915," meaning that this one copy embraced these fifteen months. Eleven regular French exchanges, including the well known *Semaine Médicale*, have given no signs of life since the war began. Some of the weeklies, like the *Lyon Médical*, changed to a monthly and have been coming regularly.

WAR NOTES

Relief for Serbians in Corfu.—Dr. Edward W. Ryan of the American Red Cross Commission to Serbia left Athens, March 2, with 240 tons of foodstuffs, clothing and medicine for the relief of Serbians on the Island of Corfu.

Government Respects Scruples.—In a circular issued by the local authorities in London, March 7, the position of a conscientious objector under the new military compulsion act is defined. They hold that the man who honestly, and as a matter of conscience, objects to combatant service is entitled to exemption. This certificate of exemption would not exempt the objector from service, for instance, in the Royal Army Medical Corps. In exceptional cases in which genuine convictions and the circumstances of the man are such that neither exemption from combatant service nor conditional exemption will adequately meet the case, absolute exemption may be granted if the tribunal is fully satisfied of the facts.

PARIS LETTER

PARIS, Feb. 17, 1916.

The War

EPIDEMIC DISEASES DURING THE WAR

Statistics show that there have been fewer epidemic diseases during the war than there were during peace. Measles and scarlet fever have almost disappeared; typhoid fever alone has increased, but it causes fewer deaths. The mortality for this disease has fallen from 12 per cent. of the patients to 2.55 per cent. in the last quarter of 1915. The mortality for all contagious diseases together, which was 0.27 per thousand in the last quarter of 1911, was, in 1915, 0.15.

Following are the figures for each disease:

	1911	1915
Measles	1.26	0.11
Scarlet fever	1.29	0.12
Mumps	2.18	0.73
Diphtheria	0.35	0.39
Cerebrospinal meningitis	0.04	0.09
Typhoid fever	1.88	4.40
Dysentery	0.11	0.18
	7.11	6.02

LECTURES ON ASPHYXIATING GASES

The administration of the medical service has organized, in all the regiments of the entrenched camp at Paris, lectures on the asphyxiating gases employed by the enemy. These lectures are given by an *aide-major,* who is a professor of chemistry and toxicology. The lecturer, after showing the composition of the asphyxiating gases used by the Germans, explained that a humid alkaline barrier is sufficient for defense. Improvised devices are not to be despised. In default of appropriate masks the nose may be plugged with a damp handkerchief on which soap has been rubbed. Experiments followed the lecture. The lecturer shut himself and his auditors up in a room where they underwent the effects of a whole series of asphyxiating gases. Each one made use of protective apparatus, the efficacy of which was thus clearly demonstrated.

MEASURES AGAINST ADULTERATED FOODS AND DRINKS

I mentioned in previous letters the brazen advertising of which the soldiers at the front are often victims. Here is an example:

MINT ALCOHOL OF THE ARMIES

Tonic. Refreshing. Prepared according to the formula of the Académie de médicine. Prevents Diseases. Three drops in a glass of water sterilize the water. Five drops give the best dentifrice. Ten give the most healthful and refreshing of drinks.

The manufacturer and vender of this product have been prosecuted for deception with regard to the nature and the quality of the goods sold. The courts condemned each of the defendants to pay 1,000 francs ($200) fine because of the falsity of the therapeutic claims and of the statement that the product is prepared according to the formula of the Académie de médecine and also because reliance on the fraudulent preparation is likely to lead the public to refrain from taking necessary precautions to avoid diseases.

AMERICAN GIFT TO THE ARMY

At the railway station of La Chapelle (Paris) a sanitary train of the American ambulance service has been put into operation. This train, offered to France by a group of Americans, includes thirteen cars, especially arranged to receive from 240 to 250 wounded. It weighs 450 tons and measures 260 meters in length (850 feet). It includes an operation room, kitchens and all modern conveniences. Each hospital car contains twenty-four litters admirably hung. A dining car and sitting-room car are for the service of the medical and sanitary staff of the train, and on each car are painted the French and American colors as well as the Red Cross.

MENINGITIS DUE TO MUMPS

At the Réunion médicale de la VI-e armée, Dr. Noël Fiessinger of Paris reported five cases of meningitis due to mumps which he had observed in a series of forty-one cases of the latter disease. Of the five meningitis cases, four occurred in a little epidemic of twelve cases of mumps in a company of Algerian sharpshooters. Meningeal complications occurred from the second to the fifth day in normal cases of mumps without being indicated by anything in the course of the parotid inflammation. They manifested themselves first by a rise in temperature to 38.5 C. (101.3 F.), by intense headache, accompanying symptoms of vomiting; the neck was stiff; there was a slight Kernig's sign, and lumbar puncture withdrew a clear fluid under pressure and containing excessive albumin and lymphocytes. These complications were temporary; in two days they disappeared while the temperature fell to 37 C. (98.6 F.). For a while headache, and vertigo and great general fatigue persisted. Lumbar puncture relieved headache in every case. It is important to detect these masked cases of meningitis, which often explain the difficult convalescence in certain cases of mumps. The fact that Fiessinger had observed four cases of meningitis among Arabs shows that this complication should not be attributed especially to a nervous predisposition, but rather to the nature of the epidemic.

THE SCHOOL OF MASSAGE FOR BLIND SOLDIERS

This institution, founded in the convalescent home at Reuilly by Mme. A. Léopold-Kahn, May, 1915, has just been definitely organized under the patronage of M. J. Brissac, director of the public charities and hygiene in the interior department. The Ecole de massage des soldats aveugles is intended to train accomplished masseurs. Several of its pupils will soon pass the examination which is to open the profession to them. In Japan the profession of masseur is reserved for the blind; for delicacy and sensitiveness of touch no one with sight can equal them.

BERLIN LETTER

BERLIN, Jan. 31, 1916.

Personal

At the conclusion of the present semester, Professor Hasse, director of the anatomic institute in Breslau, will retire from his teaching position by reason of advanced age. He was called to Breslau in 1873.

April 1, Prof. Albert Fränkel will retire from the position of director of the Hospital Am Urban in Berlin.

The War

Repeated reports have been received from the field with regard to the occurrence of nyctalopia (night blindness) among the soldiers. Professor Best of Dresden does not believe that nyctalopia is to be considered a condition peculiar to the war, but rather a disease discovered as occurring among soldiers in the trenches, where service demands activity at night, irregular meals, deprivation and strained attention, thus making unusual demands on mind as well as body; therefore such pathologic conditions are encountered but are not to be regarded as a particular war nyctalopia. A somewhat different opinion is held by Dr. Paul of Halle, the staff ophthalmologist. Sixteen nyctalopes have been referred to him since the war began. They were all strong, serviceable men, well nourished, and in no wise conveying the impression of lack of nourishment or bodily fatigue. Fourteen were members of the infantry, one was an artillery man and the other an engineer. They had served in the forefront of activities. Examination of the eyes failed to disclose any pathologic change. The oculist in the field who examined these men failed to find any pathologic change, and therefore was inclined to believe that malingering might be considered. Dr. Paul was of the opinion that the nyctalopia in these cases was not of the type occurring in times of peace, and that it was a purely nervous affection due to nerve exhaustion and psychic depression, the result of the method of warfare in vogue during this war. Dr. Paul has not seen a case of nyctalopia since last May, probably because the spring and summer weather had had a favorable influence on the psychic condition of the soldiers in the trenches. The treatment of nyctalopia is similar to that of all nervous conditions, that is, avoidance of shocks to the nervous system.

Progress in Roentgenography

At a recent session of the Berlin Medical Society, Dr. K. Lasser exhibited a new tube which, it is believed, will greatly simplify Roentgen diagnosis and therapeutics. The anticathode in this tube is made of pure wolfram. It does not become heated, and therefore the tube gives longer service than tubes in which the anticathode is made of different metal. The anticathode consists of a spiral of wolfram enclosed in an iron cylinder. The spiral is heated by means of a transformer. The apparatus is regulated with regard to the formation of hard or soft rays by means of the tension curve of the current and the elevation of temperature. This apparatus is absolutely noiseless and enables one to make pictures showing great detail, and the work can be duplicated easily, a very important feature. Practically homogeneous rays can be produced.

The Nourishment of Brain Workers

Dr. Hindhede, director of the laboratory for observations on nutrition in Copenhagen, has published a remarkable article in the *Medicinische Reform*. The American physiologist, Chittenden, recently published observations made on 108 students who were allowed an unrestricted choice in their food. Thirty-six of these students, who ingested on an average 58 gm. of albumin, failed to show any deterioration, either physical or mental, as a result of such restriction. For twenty years Hindhede has been living on such an albumin-short diet, and during that time has enjoyed the best of health. He has endeavored to ascertain whether the same state of affairs would continue under even greater restriction. Hindhede, his assistant Madsen, and two students were the subjects of the experiment. It was found that the minimum could be as low as 9.6 gm.; in fact, for a short time 5 gm. failed to influence mental or physical activity noticeably. The depreciation is 60 per cent. greater with hard labor than with moderate labor. This is opposed to the old dictum that depreciation is the same at all times, during both work and rest; in other words, that the brain worker requires as much albumin as the laborer. On the basis of 3,000 calories, the minimum is about 20 gm., somewhat less for light labor than for heavy labor. This figure is in accord with that previously given as the minimum for meat food. Hindhede is of the opinion, however, that meat, potatoes and bread albumin have the same nutritional value.

LONDON LETTER

LONDON, Feb. 21, 1916.

The War

TUBERCULOUS CASES ON ACTIVE SERVICE

Dr. G. S. Banks, tuberculosis medical officer for Aberdeen, has issued an interesting report on sixty-four insured tuberculous persons, formerly in receipt of sanatorium treatment, who have joined the military or naval forces. The number, Jan. 12, 1916, was 64, of whom 57 were on military and 7 on naval service. Of the total, 58 were suffering from pulmonary disease, and of these, 34 had received sanatorium or hospital treatment for various periods. One man actually enlisted while he was a patient in the tuberculosis wards of the city hospital. Out of 64 who enlisted, 19 have recently been on active service, 14 at the Western front and 5 on mine sweepers. Among six men discharged from the services, 1 had enlisted no fewer than three times before being finally discharged, and 3 had been discharged from one branch of the service and then enlisted in another. As regards the severity of the disease, out of 48 pulmonary cases, 1 was of the first, 12 of the second, and 35 of the third stage. Twenty out of 43 whose sputum had been examined gave a positive result. Of the 14 cases at the Western front, of whom 3 were known to have had tubercle bacilli in the sputum, 4 were glandular and 10 pulmonary, and of these 10, 6 were in the second stage and 4 in the third. From the fact that out of 14 men accepted for foreign service only 1 had broken down in health, and that only temporarily, Dr. Banks concluded that the conditions of life in the field are not unfavorable to the maintenance of the general health of the tuberculous patient if the disease is not active or far advanced. The common belief that a great risk to health inevitably follows a continued exposure to the rigors of winter is not corroborated by this experience, and any risk which may exist is more than counterbalanced by the general influence for good which attends life in the open air.

EMERGENCY SURGICAL AID CORPS FOR ZEPPELIN RAIDS

The formation of this corps was announced in a previous letter. At a meeting held at the Royal Society of Medicine, the chairman, Sir Rickman Godlee reported that two distinct duties had been imposed on the executive: (1) that of arranging for assistance in the case of raids of any description on the East Coast from Dover to the Wash, and (2) that of organizing for similar help in the case of aerial raids on the metropolis. Since the starting of the corps, 155 practitioners had volunteered to serve. Of these a considerable number have been obliged to retire, owing to having undertaken other military duties, but 107 names still remained. There had been nine calls to date—two for the East Coast and seven for London. On eight occasions the corps was asked to "stand by" till danger appeared to be over, and was at length told that it might disperse. On the last occasion the summons did not reach them till one hour after the disaster, and by the time the corps arrived on the scene (within ten minutes of the call) all the wounded had been taken away. As a result of a private call, some of the corps went to a large hospital and were kept very busy till a late hour. Surgeon-General Culling then tendered the warm thanks of the War Office to the members of the corps for the generous way in which they had spontaneously taken on themselves such important duties. He assured them that the mere knowledge that there was such a body to fall back on in case of need was a source of great comfort to the War Office, and he added that he was authorized to say that the need for their services was graver than ever, and he believed that before long they would find more than enough to do.

THE EPIDEMIC OF CEREBROSPINAL MENINGITIS IN THE MILITARY CAMPS

After the outbreak of the war, when the new army was being formed and large numbers of young men were congregated in camps, in some of which cerebrospinal meningitis became epidemic, the Medical Research Committee (a body, as stated in previous letters, formed under the insurance act for the purpose of investigating disease), in conjunction with the War Office, appointed an advisory committee in the spring of 1915 consisting of three well-known bacteriologists, F. W. Andrews, William Bulloch and T. R. Hewlett. The activities of this committee extend over the whole country, and twenty-four cerebrospinal fever laboratories were established. A very important report has now been issued. A general conclusion arrived at is that the epidemic was not one of cerebrospinal fever as such, but was an epidemic of the meningococcus in the throats of the population at large. It was an epidemic prevailing in winter and spring, because at these seasons people are in closer contact with each other indoors. The conditions of camp life and barrack life render it preeminently liable to affect the military population. It prevails much more in towns than in the country for the same reason. The actual cerebrospinal fever is due to the fact that in some cases the germ passes from throat and nose to the brain and spinal cord. It does not pass in many cases, and why it should pass in some cases and not in others is obscure. In London during the spring and early summer the microbe was found in 10 per cent., and, another time in 13 per cent. of persons examined, who had not been in contact with the disease. The difficulty is to explain the escape of these carriers, and the failure of others to escape. It is suggested that "from time to time and hitherto very rarely in this country individual races (of the germ) attain a greater virulence, and their saprophytic spread is attended, not only by a larger number of cases of meningitis, but also by the attack of young adults who in ordinary circumstances are immune. There seems to be ground for the belief that at least one out of the three principal strains concerned in last year's epidemic was introduced by the Canadian troops."

With regard to treatment, four different kinds of serum were used, but the results were not very encouraging, and judgment is suspended meanwhile. In two cases serum derived from a patient who had recovered was injected with "almost dramatic results." In one case the patient received benefit from the injection of serum taken from himself. Vaccines were also employed, but the general experience of vaccine treatment seem to have been little more favorable than that of serum. Two of the reports speak of the use of vaccine as a safeguard against the disease. Twelve exposed to infection were vaccinated. None of them developed the disease. Again, seventy-nine "carriers" were inoculated, and no case of the fever arose among them. One case occurred among forty-nine carriers not inoculated.

BUDAPEST LETTER

BUDAPEST, Feb. 10, 1916.

Rules for Physicians in the Care of the Eye

Prof. Emil Gross of the Budapest University has compiled the following instructions, which are circulated among all the physicians of the Hungarian army:

1. Put a protective dressing on an injured eye. On the eyelids place sterilized gauze loosely, then a piece of wadding and next a bandage.

2. This dressing should be changed after twenty-four and at the latest forty-eight hours, because the conjunctiva of the injured eye produces secretion.

3. For cleansing the eye the most suitable solution is a 3 per cent. boric acid solution—strong antiseptics are harmful.

4. Dilate the pupil by instillation of a 1 per cent. atropin solution, but if the tension of the eyeball is increasing (this can be controlled by palpation of the eyeball with the index

fingers), *stop atropin instillation;* in this case 1 or 2 drops of a 2 per cent. pilocarpin solution are indicated.

5. Small entrance opening, internal hemorrhage, or consecutive gray cataract arouse the suspicion of the presence of a foreign body; in most cases it is of metal. The diagnosis must be verified with the Roentgen ray; in case it is iron, with the sideroscope. The patient should be sent, without delay, to an eye clinic or an eye hospital, where an iron splinter can be removed with a magnet or with operation. A delay of even a single day may be fatal to the eye!

6. The remains of bruised eyes, or severely injured eyes, which do not possess light vision, should be removed in the interest of the other eye. If there are symptoms of iritis or inflammation of the ciliary body and there is no light vision, the removal of the eyes must be regarded as urgent. The enucleation of the eye shall be performed with the sparing of the conjunctiva and muscles, for otherwise the cavity is not fit for the wearing of an artificial eye. The removal of metal splinters impacted in the orbit and causing no reaction, is not necessary.

7. The earliest possible repair of defects of the eyelid is to be performed, and similarly the restoration of eventerated eyelids.

8. Suppurative conjunctivitis is contagious; such eyes should not be dressed, and the secretion must be washed out frequently. The sound eye is to be protected. Such patients should be sent to eye hospitals.

9. Trachoma can be diagnosed, sometimes, only by turning the upper eyelid up and finding in the transitional fold the characteristic nodules, hypertrophies and radiary scars.

The Rise of the Price of Certain Drugs

In view of the immense demand for certain drugs, and the difficulties of importation, the minister of public hygiene has issued an order which permits the chemists to charge higher prices for certain drugs. Of course, this increase of price is temporary and whenever the drugs are manufactured within the country, which will probably be soon, the increased prices will drop to normal. Among the drugs are preparations containing benzin, collodium flexile, camphor, mercury, linseed oil, castor oil, turpentine, chloroform and many ointments.

The Gallantry of Professor Eiselsberg

About four weeks ago Konstantin, King of Greece, telegraphed for the services of Professors Kraus and Eiselsberg, of the Vienna University. King Konstantin had to undergo an operation for empyema of the thorax, which was successfully performed by Professor Eiselsberg. King Konstantin paid a fee of 50,000 francs to Professor Eiselsberg. This fee the professor offered to the Bulgarian Red Cross, which in gratitude enlisted him as an eternal honorary member of the society.

The Right to Perform Operations on Soldiers

The minister of home defense has issued the following order: In all cases in which sick or wounded soldiers need operations, which are in themselves not dangerous, and the fitness for service depends entirely on the performing of the operation, the military surgeon has the right to perform the operation on his own responsibility without the consent of the patient.

Pathologic Conditions After Vaccination Against Typhoid

Dr. Masko has seen pathologic conditions after vaccinations against typhoid in sixty-one out of 3,000 patients treated in a garrison hospital. In all these cases there were more or less general reactions after the vaccinations. These consisted of fever, and pains in the head, limbs, joints, back and chest. In nine cases he observed rheumatic arthritis, which proved benign, with one exception, the patients recovering within one week; this rheumatism did not very much improve on treatment with salicylic acid and collargol, but it readily improved on application of hot air. In four cases symptoms of nephritis made their appearance. In three cases latent apical processes have become peremptorily acute ones, and in one case miliary tuberculosis has occurred after the inoculation. Bronchitis of short duration occurred in practically all of these cases. In thirty-five cases severe diarrhea supervened; in two cases latent dysentery became acute. In many cases the whole upper abdominal region became painful, the liver was tender on pressure; in four cases the spleen became swollen; in five cases roseolae appeared, which disappeared very quickly. Scarlet fever-like rashes have been observed in three cases, in every instance twenty-four hours after the second inoculation; they disappeared without any trace, without scaling off of the skin; in these three cases the condition of the patient was severe, the fever 39 C. (102.2 F.) subsiding only after the fourth day. In one case the rash was similar to measles, in another case to erythema nodosum. In two cases the inguinal glands became enlarged, were painful, and the patients were feverish through several days. In eleven cases a condition similar to typhoid occurred, and the pathologic appearances were severe. Dr. Masko regards this condition as a toxemic one and calls it "typhotoxicosis." In some cases Dr. Masko observed a strong Ehrlich diazo reaction, and on this ground he is of the opinion that in consequence of the typhoid vaccination, not only bactericidal and antitoxic substances appear in the blood, but also peculiar changes take place in the lymph apparatus and particularly in the lymph system of the intestinal tract, so that blood reacts more quickly and strongly against the typhoid bacilli and their toxins. However, considering the brilliant results of the antityphoid vaccinations, the described disagreeable by-effects must not prevent us from administering them. In private practice it is advisable to draw the attention of the patient to the possibility of reaction. On account of this possibility, soldiers should be given three or four days' freedom from service after vaccination. Dr. Masko used the Besredka vaccine.

Association News

THE AMERICAN MEDICAL GOLFING ASSOCIATION

At the last annual session of the American Medical Association, the American Medical Golfing Association held its first tournament in San Francisco, June 21, 1915. An organization was completed with the following officers: president, Wendell C. Phillips, New York; vice president, James Eaves, San Francisco; secretary-treasurer, Will Walter, Chicago. Plans are being made for the second tournament, to be held in Detroit in connection with the annual session of the Association. The by-laws provide that any Fellow of the Association who shall pay an enrolment fee of $2 becomes a perpetual member. When a member participates in the tournaments of the Association he shall pay a playing fee of $1, the green's fee, charged by the local club, and the annual dinner fee, as determined by the local committee (if he desires to participate in the annual dinner and meeting). Further information may be obtained by addressing the secretary-treasurer, Dr. Will Walter, 122 South Michigan Avenue, Chicago.

Marriages

CAPT. HERBERT H. SHARPE, M. C., U. S. Army, Fort Davis, Alaska, to Miss Marshalle Bates Jones at Nome, Alaska, December 20.

MAJ. CONRAD E. KOERPER, M. C., U. S. Army, Philadelphia, to Miss Florence Marguerite Bateman at Fort Clark, Texas, March 15.

CAPT. DANIEL F. MAGUIRE, M. C., U. S. Army, Fort Ontario, N. Y., to Miss Fannie Renshaw of Pensacola, Fla., February 16.

EMANUEL ZACHARY SHAPIRO, M.D., Duluth, Minn., to Miss Edna M. Baker of Virginia, Minn., at Duluth, February 17.

JAMES JOHN MCDEVITT, M.D., East Boston, to Miss Augusta Hanss Sargent of Worcester, Mass., February 29.

GROVER AUGUSTUS STEM, M.D., Westminster, Md., to Miss Irene Miller of Baltimore, in September, 1914.

CLARENCE HOMER KEMP, M.D., Elmwood, Ill., to Miss Pauline Miller of Lacon, Ill., February 25.

JOHN O'CONNELL, M.D., St. Louis, to Miss Uceyle Risch Maloney of Shreveport, La., March 1.

LOUIS STERNBERG, M.D., New York City, to Miss Henrietta Gluckman of Brooklyn, February 23.

FRANK MARTIN, M.D., Baltimore, to Miss Elizabeth Prescott Bigelow of Boston, March 1.

LORAINE A. MARTY, M.D., to Miss Olive B. Musser, both of Kansas City, Mo., January 11.

ABRAHAM RISEL HOLLENDER, M.D., to Miss Anna Winsberg, both of Chicago, March 1.

Deaths

William Louis Rodman, M.D., Philadelphia; aged 57; president of the American Medical Association; died at his home, March 8, from pneumonia, after a short illness.

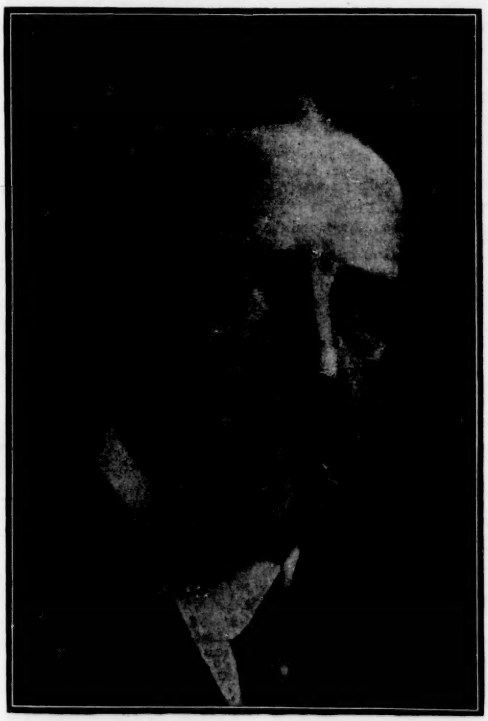
Dr. Rodman was born in Frankfort, Ky., Sept. 27, 1858. He was the son of General John Rodman, who for many years was Attorney General of Kentucky. His preliminary education was received at the Kentucky Military Institute, from which he was graduated in 1875, with the degree of M.A. He later received the degree of LL.D. from his alma mater. He commenced the study of medicine under the preceptorship of his uncle, Dr. James Rodman, and his cousin, Dr. W. B. Rodman, and graduated from Jefferson Medical College in 1879. After a service as intern in Jefferson Hospital, he entered the United States Army as acting assistant surgeon and for nearly two years was stationed at Fort Sill.

In 1882 Dr. Rodman was married to Betty C. Stewart, daughter of the late Dr. J. Q. A. Stewart, a well known alienist of Kentucky. He then practiced for about two years in Abilene, Texas, after which he removed to Louisville and was appointed demonstrator of surgery in the Medical Department in the University of Louisville and clinical assistant to Dr. David W. Yandell. He held this position from 1889 to 1893, when he resigned to accept the professorship of surgery in the Kentucky School of Medicine, Louisville. In September, 1898, he was made professor of principles of surgery and clinical surgery in the Medico-Chirurgical College of Philadelphia, and moved to that city. From 1900 to 1908 he was also professor of surgery and clinical surgery in the Woman's Medical College of Pennsylvania, Philadelphia.

The work of Dr. Rodman in the American Medical Association is recognized in an editorial in this issue. Dr. Rodman was president of the Association of American Medical Colleges in 1902 and 1903, and it was largely through his efforts as president of this organization that the National Board of Examiners became possible. Dr. Rodman was deeply interested in this project of standardization of examination for medical licensure and was instrumental in securing the financing of the work. He was also president of the Philadelphia Medical Club in 1910, and was a member of the College of Physicians of Philadelphia, the American College of Surgeons, American Surgical Association, International Surgical Association, and Association of Military Surgeons of the United States. He was also a member of the staff of Blockley and the Presbyterian hospitals, Philadelphia. In 1915, Dr. Rodman was commissioned first lieutenant, Medical Reserve Corps, U. S. Army.

His chief contributions to the literature were the oration on "Gastric Ulcer"; a paper on "Cancer of the Breast" read before the British Medical Association in 1904; a monograph on "Diseases of the Mammary Gland," which appeared in 1908, and chapters contributed to the "International Text Book of Surgery," Keen's "System of Surgery," and Bryant and Bush's "Practice of Surgery."

He is survived by his widow and three children, Dr. J. Stewart Rodman, who was associated with his father in practice; Miss Virginia Rodman and Mrs. Lincoln Godfrey, Jr.



WILLIAM LOUIS RODMAN, M.D., 1858-1916

Wisner Robinson Townsend, M.D., New York City; aged 59; fell from a window of his apartment, March 12, and was instantly killed.

He was born in Clifton, N. Y., Aug. 5, 1856, the son of Wisner Helme and Emily Kyle Townsend. He received his A.B. degree at Columbia University in 1877, graduating three years later from the College of Physicians and Surgeons in the City of New York. In the same year he was given his master's degree by his alma mater. He had practiced in New York since his graduation.

He was a Fellow of the American Medical Association; second vice president in 1914-1915; a member of its House of Delegates from 1906 to 1908; a member of the Board of Trustees from 1908 to 1911, and secretary of the board for the last two years of that period. He had been secretary of the Medical Society of the State of New York since 1896, and for twelve years he had been secretary of the board of trustees of the New York Academy of Medicine. He was also a member of the American Orthopedic Association and its president in 1899, and was president of the New York State Association of Railway Surgeons in 1902. He was professor of orthopedic surgery in the New York Polyclinic; associate surgeon to the Hospital for Ruptured and Crippled; orthopedic surgeon to the French Hospital, New York; consulting orthopedic surgeon to the J. R. Smith Infirmary, Staten Island, and consulting surgeon to the Bayonne (N. J.) Hospital, and was a voluminous contributor to the literature of orthopedic surgery.

Dr. Townsend had been in bad physical condition for a considerable time, suffering from diabetes and frequent attacks of vertigo, and of late had been a victim of insomnia. It is believed that he had attempted to open the bathroom window, which was only about 2 feet from the floor, and seized with vertigo, fell to his death.

Dr. Townsend was a man of great executive ability and winning personality, and his tragic death comes as a great shock to his many professional friends throughout the United States. He is survived by a widow and two sons.

Charles M. Thomas, M.D., Philadelphia, Pa.; Hahnemann Medical College, Philadelphia, 1871; aged 66; from 1875 to 1878 demonstrator of surgery in his alma mater; from that date to 1891 professor of operative surgery, ophthalmology and otology; afterward emeritus professor of ophthalmology and otology and dean of the college from 1903 to 1906; died at his country home near Westchester, January 14.

George Huntington, M.D., Cairo, N. Y.; College of Physicians and Surgeons in the City of New York, 1871; aged 65; formerly a Fellow of the American Medical Association; a member of the Medical Society of the State of New York; president of the Dutchess County (N. Y.) Medical Society in 1888; for whom Huntington's chorea was named; visiting physician to the Matteawan General Hospital; died at the home of his son in Cairo, March 3, from pneumonia.

Daniel Elisha Foote, M.D., Belvidere, Ill.; University of Buffalo, N. Y., 1851; aged 87; formerly a Fellow of the American Medical Association; a member of the Illinois State Medical Society; for sixty years a resident of Belvidere; in the early fifties, surgeon of the Fifty-Seventh Infantry, New York State Militia; for several terms coroner of Boone County and a member of the school board of Belvidere; died at his home, February 22.

John Thomas Dickes, M.D., Portland, Ind.; Medical College of Indiana, Indianapolis, 1885; Kentucky School of Medicine, Louisville, 1885; aged 58; a Fellow of the American Medical Association; coroner of Jay County from 1890 to 1892, and until two years ago, county health commissioner and secretary of the County Board of Health; for thirty years a practitioner of Portland; died at his home, February 28, from heart disease.

Thomas Henry Mann, M.D., Bolton, Conn.; Albany (N. Y.) Medical College, 1870; aged 72; formerly postmaster of Fitchburg and editor of the Fitchburg (Mass.) *Evening Mail*, and also of the Milford (Mass.) *Daily News;* a veteran of the Civil War and a prisoner at Andersonville; at one time a member of the staff of Governor Littlefield of Rhode Island; died at his home, March 2.

John W. Ayler, M.D., Newport News, Va.; Medical College of Virginia, Richmond, 1864; aged 77; a member of the Medical Society of Virginia; and one of the oldest practitioners on the Virginia Peninsula; surgeon in the Confederate service during the Civil War; formerly city physician of Newport News; died at his home, February 28, from cerebral hemorrhage.

Edward Joseph Stone, M.D., Cleveland, Ohio; Bellevue Hospital Medical College, 1880; aged 58; for many years a practitioner of Oneida, N. Y.; once president of the Tioga County Medical Society and health officer; who had for many years devoted his attention exclusively to life insurance work; died suddenly, February 19, in his office in Cleveland.

Orlyn Lee Chaffee, M.D., Waverly, Iowa; Chicago Homeopathic Medical College, 1902; aged 39; a member of the Iowa State Medical Society and once president of the Bremer County Medical Society; who had been operated on at Mercy Hospital, Waverly, for gastric ulcer and gallbladder disease; died from pneumonia, March 2.

Timothy Griffith, M.D., Frostburg, Md.; New York University, New York City, 1888; aged 54; vice president of the Allegany and Garrett County Medical Society; member of the Board of Health of Frostburg; once vice president of the Medical and Chirurgical Faculty of Maryland; died at his home, March 2, from nephritis.

Edward Fayette Eldridge, M.D., San Diego, Calif.; Dartmouth Medical School, Hanover, N. H., 1882; aged 60; for many years a practitioner of Grand Junction, Colo., where he was surgeon to the railways centering at that city; author of several novels and poems characteristic of the West; died at his home, March 8.

Andrew Jackson Butler, M.D., Unadilla, N. Y.; Rush Medical College, 1891; aged 47, a Fellow of the American Medical Association and a well known practitioner of Otsego County, N. Y.; died at his home, March 4, from the effects of an incised wound of the throat, self-inflicted, it is believed, with suicidal intent.

Herbert Roland Bowers, M.D., Lancaster, Pa.; Jefferson Medical College, 1889; aged 48; formerly a member of the Medical Society of the State of Pennsylvania; surgeon to St. Joseph's Hospital, Lancaster; was struck and killed by a Pennsylvania train at Edgewood Station, near Pittsburgh, February 26.

William Theophilus Stuart, M.D., Toronto; University of Toronto, 1877; Trinity Medical College, Toronto, 1877; aged 62; for many years professor of organic chemistry in his alma mater; one of the organizers and major of the Forty-Eighth Highlanders; died in Oakville, Ont., November 13.

Erastus J. Lyons, M.D., Lake Charles, La.; New Orleans, School of Medicine, 1861; aged 76; for more than half a century a practitioner of Calcasieu Parish, La.; died at his home, February 17, from senile debility.

Edwin Landis Detwiler, M.D., Herndon, Va.; Jefferson Medical College, 1886; aged 55; a member of the Medical Society of Virginia; was shot and instantly killed, February 29, near Herndon, by a farmer who had been an inmate of the State Hospital, but had been released on parole.

Raymond Jesse Nate, M.D., Chicago; Rush Medical College, 1892; aged 45; was fatally injured, March 10, by the falling of a weighing machine in front of a drug store at Thirty-Ninth Street and Cottage Grove Avenue, and died while being taken to the Lakeside Hospital.

Edwin William Poinier, M.D., Huntington, Ind.; College of Physicians and Surgeons, Chicago, 1902; aged 36; a Fellow of the American Medical Association; for ten years a practitioner of Andrews, Ind., and county physician of Huntington County; died at his home, March 6.

George W. Tarlton, M.D., Cape Girardeau, Mo.; Washington University, St. Louis, 1881; aged 55; a member of the Missouri State Medical Association; died at his home, December 13, from arteriosclerosis, associated with interstitial nephritis and mitral regurgitation.

Harry David James, M.D., Chicago; Dearborn Medical College, Chicago, 1907; professor of ophthalmology in the Chicago Eye, Ear, Nose and Throat Hospital; died at his home, January 27, from pneumonia.

Robert F. Baker, M.D., Sparta, Tenn.; Bellevue Hospital Medical College, 1865; aged 70; a member of the Tennessee State Medical Association; died at his home near Fancher's Mills, Tenn., about February 18.

Meridith Caton Kimball, M.D., Converse, Ind.; Cincinnati College of Medicine and Surgery, 1874; aged 69; a well-known practitioner and clergyman; died at his home February 24, from heart disease.

George O. Williams, M.D., Greene, N. Y.; Albany, N. Y., Medical College, 1866; aged 72; a Fellow of the American Medical Association; died at his home in Greene, February 24, from bronchopneumonia.

William Leet Kreider, M.D., Prairie City, Ill.; Rush Medical College, 1859; aged 84; for more than sixty years a practitioner of Prairie City; died at his home, February 19, from cerebral hemorrhage.

Samuel Armstrong Aiken, M.D., Cambridge, Neb.; New York University, New York City, 1887; aged 55; died February 18, while driving his automobile near his home in Cambridge, from heart disease.

George Mason Foskett, M.D., Worcester, Mass.; University of Vermont, Burlington, 1883; aged 59; a member of the Massachusetts Medical Society; died at his home in Worcester, February 23.

George D. Dresser, M.D., New York City; New York Homeopathic Medical College, 1874; formerly of Shrub Oak, N. Y.; aged 67; died at his home, February 23, from intermittent fever.

George Edward Flood, M.D., Chicago; Detroit Medical College, 1879; aged 59; died in the Washington Park Hospital, Chicago, February 28, from uremia, after a surgical operation.

Oscar Howard Morris, M.D., Coolidge, Ga.; Southern Medical College, Atlanta, 1898; aged 40; died at his former home in Rockmart, Ga., February 20, from hemorrhage of the lungs.

John Fawcett, M.D., Lents, Ore.; Manitoba Medical College, Winnipeg, 1886; aged 59; died at his home in Lents, Portland, Ore., February 8, from Hodgkin's disease.

Leonard Adair, M.D., New York City; New York University, New York City, 1896; aged 45; died at his home in Harlem, N. Y., February 24, from nephritis.

Henry John Hertz, M.D., Zearing, Iowa; State University of Iowa, Iowa City, 1909; aged 30; died in a hospital in Iowa City, February 18, from heart disease.

T. W. Cooper, M.D., Beech Grove, Ky.; Kentucky School of Medicine, Louisville, 1875; aged 74; died at his home, February 18, from valvular heart disease.

N. B. Cotton, M.D., Bentonville, Ark.; Western Reserve University, Cleveland, 1863; aged 69; died at his home, February 22.

Correction.—The death notice of Dr. William Hammond Eaton of Adrian, Minn., which appeared in THE JOURNAL of March 11, page 830, is incorrect. Dr. Eaton is alive and did not have the accident referred to.

Resolution Endorsing the Work of the Council on Pharmacy and Chemistry

Presented at the San Francisco Session and Signed by All the Members of the House of Delegates in Attendance.—(See Journal A. M. A., July 3, 1915, p. 70.)

Resolved, We, Members of the House of Delegates of the American Medical Association, believe that every effort must be made to do away with the evils which result from the exploitation of the sick for the sake of gain. Earnestly believing that the continued toleration of secret, semisecret, unscientific or untruthfully advertised proprietary medicines is an evil that is inimical to medical progress and to the best interest of the public, we declare ourselves in sympathy with, endorse and by our best efforts will further the work which has been and is being done by the Council on Pharmacy and Chemistry of the American Medical Association in the attempt to eliminate this evil.

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A. H. Levings
Daniel Hopkinson

Resolved, We, Members of the House of Delegates of the American Medical Association, believe that every effort must be made to do away with the evils which result from the exploitation of the sick for the sake of gain. Earnestly believing that the continued toleration of secret, semisecret, unscientific or untruthfully advertised proprietary medicines is an evil that is inimical to medical progress and to the best interest of the public, we declare ourselves in sympathy with, endorse and by our best efforts will further the work which has been and is being done by the Council on Pharmacy and Chemistry of the American Medical Association in the attempt to eliminate this evil.

Please sign in the space to the right, using blood ink, and mail in the accompanying stamped envelope

W. Hammond Dunn
Chairman of Bd of Trustees

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Correspondence

Subacromial Bursitis

To the Editor:—In the March, 1915, issue of the *American Journal of the Medical Sciences,* I published an article discussing "Prevalent Fallacies Concerning Subacromial Bursitis: Its Pathogenesis and Rational Operative Treatment." Among other points I emphasized the following: The calcareous deposit often found in these cases is not, as generally believed, in the bursa, but beneath it, in or on, or in and on, the supraspinatus tendon or, occasionally, the infraspinatus; and "excision of the bursa," recommended as a routine operative treatment by some textbook writers and others, is not only unnecessary but, in fact, cannot be performed "without a mutilating dissection" because of the extent of this large bursa and its intimate relations with the neck of the humerus and the capsule of the shoulder joint. My contentions were based on the study of many cases clinically, cadaver dissections and, at that time, seven operations.

In THE JOURNAL (Jan. 22, 1916, p. 264), Dr. Albert H. Montgomery of Chicago reported a single case of subacromial bursitis in which he had operated, on the basis of his observations and deductions in which case he disputed all of my contentions. Some of these I shall consider again in a forthcoming article. I wish here to reply, very briefly, to the two more important assertions of Dr. Montgomery, that he found the lime deposit in the outer wall of the bursa and that he extirpated the bursa. I quote from his report: "The space between the shadow and the humerus is so wide that it would scarcely seem possible that the lime salts responsible for it could be within the tendon. . . . The amorphous masses of lime salts were deposited in the upper wall of the bursa. . . . Notwithstanding the statement of Wrede and Brickner, extirpation of the bursa is possible. [Wrede made no such statement, as I recall his article in the *Archiv für klinische Chirurgie,* 1912, xcix, 259, but merely reported a single case of subacromial bursitis in which he found the deposit within the supraspinatus tendon]. . . . The calcium deposits were confined to the upper wall of the bursa. The wall lying on the humerus and supraspinatus tendons [?] was intact, and the tendon of the supraspinatus muscle appeared normal. . . . After extirpation of the bursa . . . I believe that the best treatment, however, is excision of the bursa which is possible even without a mutilating operation. . . . This case is so typical both in Roentgen-ray and operative findings as to leave no doubt that the bursa is the structure primarily involved, and disproves the rather dogmatic statements of both Wrede [*vide supra*] and Brickner."

That the deposit in Montgomery's case could scarcely be within the tendon because of the wide space between its shadow and that of the bone is a pure assumption and a faulty one. I have several roentgenograms quite like Montgomery's, and with the shadow equally far from that of the humerus, from cases in which, nevertheless, the deposit *was* found within the supraspinatus tendon; and in my article I stated that "the shadow . . . may be . . . separated by a wide space from the bone."

In a personal communication to me, Dr. Montgomery wrote: *"In speaking of extirpation of the bursa, I referred only to the diseased portion."* And yet, in a scientific discussion, he had repeatedly said that he "extirpated the bursa" and, disputing my anatomic contention, he advised this as the best treatment.

Just as he was admittedly in error in his published statement that he extirpated the bursa, and jumped to a hasty and insupportable interpretation of his Roentgen picture, so, too, I am sure, from my findings in fifteen operations and from the corroboration of other surgeons, that Montgomery was mistaken in believing that he found the lime deposit in the outer wall of the bursa. These walls are often very thin and are apt to be very adherent over the deposit (Montgomery made no mention of the contents of the bursa); and (as I emphasized in my article above referred to) unless they are first separated by a nice dissection, one is very apt, especially at his first operation, to believe that the lime deposit lying under the bursa, and often there adherent to its inner wall, is within the sac or its outer wall. In his article Montgomery stated that the inner wall of the bursa appeared normal; in his letter to me he said that he *curetted off* this [normal] wall! This supports my conviction that he had not precisely differentiated the structures.

WALTER M. BRICKNER, M.D., New York.

Constipation in Causation of Epilepsy and Migraine

To the Editor:—Dr. Strate's inquiry (THE JOURNAL, Feb. 26, 1916, p. 675) is of the kind precisely calculated to bring out essential facts and straighten out apparent inconsistencies, or, as I prefer to think, to fill out possible omissions in my statement of the causal relationship between constipation and epilepsy. Dr. Strate says: "A symmetrical edema of both internal capsules is of course possible, but shall we say it is probable?" I fancy the answer is to be found in going back to the initial factor in the causation of the disease, and then following sequent phenomena up to the seizure. This, briefly stated, is as follows:

1. Epilepsy is an infection due to a specific organism, the primary habitat of which is the alimentary canal, more especially the cecum.

2. Distortions and displacements of the intestines, more especially of the colon and cecum, cause constipation and thereby force the absorption of the organism into the circulation.

3. The organism would seem to exercise a selective action on the internal capsule, the intermediate but sequent pathologic changes being (*a*) bacteremia with associated toxemia, (*b*) acidosis involving the entire system, and (*c*) edema of various structures and organs, but focalizing apparently by selective action at the internal capsule, both sides being considered as one.

It is the wide diffusion, the systemic extent of these pathologic changes that needs to be kept in mind. When this is done, does it not seem that the law of probability would incline to symmetrical rather than to unilateral or even more definite localization of the terminal edema? That such localizations do occur in individual cases is, however, a fact of frequent observation. In the absence of positive knowledge on the subject, may we not in a measure satisfy our logical instincts by assuming that the various conduction paths have varying powers of resistance in various persons? At any rate, why should a general infection focalize on one side rather than another?

When Dr. Strate states that my theory would more nearly account for "a typical migraine with its unilateral headache, hemianopsia, diplopia," etc., it would seem again that he has overlooked infection as the fundamental factor in epilepsy—an oversight for which I fear the arrangement of the text in my explanation of the disease is in a measure responsible. As a matter of observation, the symptoms referred to as well as other strictly neurotic symptoms are but rarely encountered among victims of the epileptic infection, the specific organism of which is now daily demonstrated in my cases. It is this infection that is constantly to be kept in mind, not only in the interpretation of the epileptic phenomena, but also, now that we have the organism, in the formulation of treatment, both medical and surgical.

CHARLES A. L. REED, M.D., Cincinnati.

The Fingers of Primitive Man

To the Editor:—In the fragmentary published reports of the art of the cave man, referred to recently in THE JOURNAL (Feb. 12, 1916, p. 513), accurate details of even obvious things seem to be lacking.

In the outline drawings of the human hand it would be important to know which hand was used as the object of illustration. Some ethnologists believe that primitive man was left handed, and this led to the inference that "backward" writing like that of the Semitic language was the result of this lefthandedness.

It would be more logical to assume that primitive men lost their fingers in combat with fellow men than to infer that it was the result of a sacrificial rite or from the trauma from defective weapons. With the presumptive limited range and efficiency of primitive weapons, hand to hand combat must have been the rule. It would seem entirely probable that the teeth would play an important rôle in this weaponless warfare, and that the fingers of a combatant would be the most vulnerable point of attack as actually takes place in the jungles of Africa today.

The vicissitudes of man's early environment would logically be opposed to a theory that he voluntarily removed his most useful members. J. H. MACKAY, M.D., Houston, Texas.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

METHYL ALCOHOL AS A FUEL

A correspondent writes:

There is some question in the minds of some of us as to whether the enclosed item accords with the others on the subject which you have published in previous issues and with the actual facts as they have been clinically demonstrated. We trust we are not asking too much of you when we request that you let us have a line or two on this subject either verifying the item enclosed or pointing out wherein, if at all, it is erroneous; and, whether or not it is erroneous, whether it may not in your opinion contain advice which might be dangerous to give to the laity.

ANSWER.—Our correspondent refers to a reply to a previous correspondent (Jan. 15, 1916, p. 209), in which we said:

"There is no reason to believe that methyl alcohol as a fuel possesses any special dangers or disadvantages. The products of its complete combustion are the same as those of the combustion of ethyl alcohol, namely, water and carbon dioxid."

Our present correspondent's point is well taken. The danger of poisoning from methyl alcohol used as a fuel is probably slight, yet our answer should have pointed out the possibility of toxic effects from incomplete combustion. Two cases of poisoning attributed to wood alcohol used as a fuel are on record.

THE REQUIREMENTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY

To the Editor:—I have been reading with interest the reports of the Council, and have several of the volumes of reports of the work done.

Where can I find the data with reference to the requirements of the Council in order that the products of manufacturers may be acceptable in a scientific, ethical and therapeutic sense?

I am prompted to make inquiry because at medical society exhibits I am at times at a loss to place properly some products so freely sampled.

Again I have noted that at times a preparation starts out all right and seems to fill a place in daily work, and later I have noted newspaper exploitations of that which was started by physicians.

With the right data at hand I intend to include a few references in papers and essays that will gain attention to some points so necessary for us to keep in mind, as I believe the Council is doing a big work along its chosen line. THOMAS M. STEWART, M.D., Cincinnati.

ANSWER.—The information asked for by our correspondent will be found in the Official Rules of the Council on Pharmacy and Chemistry, which appear in New and Nonofficial Remedies (pp. 9-21 of the 1916 edition). These rules may also be obtained in pamphlet form by sending a 2 cent stamp to the Secretary of the Council, 535 North Dearborn Street, Chicago.

These are the rules by which the Council is governed in admitting articles to New and Nonofficial Remedies. As will be seen, they merely require that the composition of the remedy be nonsecret, that its uniformity be safeguarded, that no false claims be made regarding its therapeutic properties, and that its use shall be based on at least a probability of therapeutic merit. Any one who has sufficiently broad knowledge (which must include knowledge of pharmacy, pharmacology and chemistry as well as of medicine) can apply these rules, although in many cases it will be found difficult as well as tedious to obtain the evidence necessary to pass judgment on a single preparation.

Practically, the labor of critically examining and judging all the various proprietary preparations which physicians are asked to prescribe would be an intolerable burden for any one man, be he ever so well qualified. Even with all the resources of the Council on Pharmacy and Chemistry, the task is not a simple one. The easiest way to learn whether or not a certain preparation complies with the Council's rules is to see if it is described in New and Nonofficial Remedies.

The work of the Council on Pharmacy and Chemistry, and the principles on which it is conducted, are discussed in Sollmann's "Broader Aims of the Council on Pharmacy and Chemistry" and in Simmons' "Work of the Council on Pharmacy and Chemistry: Its Effect on Medical Progress." Either of these pamphlets will be sent on receipt of a self-addressed stamped envelope.

LARKSPUR FOR PEDICULOSIS

To the Editor:—Please send me a formula for preparing larkspur for use in cases of pediculosis capitis. J. P. Q.

ANSWER.—The following formula is recommended by Otto Raubenheimer (*Journal of the American Pharmaceutical Association*, October, 1912, p. 1138):

Delphinium, ground	100 gm.
Acetic acid	50 c.c.
Glycerin	50 c.c.
Alcohol	100 c.c.
Water, a sufficient quantity to make	1,000 c.c.

Boil the ground larkspur seed with 800 c.c. of water, to which the acetic acid and glycerin have been added, for ten minutes in a covered vessel, set aside till cold, then add the alcohol and allow to macerate over night. Then filter and add sufficient water through the filter to make the product measure 1,000 c.c.

Among other formulas which have been suggested in various drug journals are the following:

Larkspur seed, ground	8 ounces
Green soap	2 ounces
Potassium carbonate	1 ounce
Oil of lavender flowers	1 dram
Alcohol	24 ounces
Water	8 ounces

Macerate for ten days with occasional agitation and filter, adding enough of a mixture of alcohol 3 parts and water 1 part, to make 32 fluidounces; or the tincture may be prepared by percolation, after maceration for a few days.

The following formula is said to be cheaper and to be more easily made than ordinary tinctures:

Larkspur seed	100 gm.
Potassium carbonate	10 gm.
Alcohol	500 c.c.
Water to make	1,000 c.c.

Mix the seed and the carbonate with 500 c.c. of water; boil the mixture for five minutes; when it has become cold, add the alcohol; strain, and add enough water to make the finished product measure 1,000 c.c. Filter, if not clear.

Larkspur seed	4 ounces
Boiling water	6 ounces
Alcohol	10 ounces
Diluted alcohol to make	1 pint

Crush the seed in an iron mortar, transfer them to a suitable vessel, pour the boiling water on them, cover the vessel and let the whole stand until cool; add the alcohol, stir well, and after twenty-four hours, filter through cotton.

Larkspur is poisonous, and if there are abrasions of the skin it may be harmful. It is not mentioned in connection with the treatment of pediculosis by many medical writers who prefer kerosene. The latter is applied under a suitable cap and left on about twenty-four hours. The hair is then thoroughly combed with a fine comb to remove the nits, after which it is thoroughly washed.

Practice and Scientific Medicine.—Some practitioners of medicine, as we all know, have made little progress as the science has been developed. They practice the same way they did years ago and look on modern methods of diagnosis and treatment as absurd in the extreme. They make no attempt to familiarize themselves with medical literature, nor do they utilize the laboratory to aid them in their work. It should be stated in fairness, also, I regret to say, that the foregoing statements apply with equal force to some of our younger practitioners.—E. F. McCampbell, *Ohio Public Health Journal.*

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ARIZONA: Phoenix, April 4-5. Sec., Dr. John Wix Thomas, 200 National Bank of Arizona Bldg., Phoenix.

CALIFORNIA: Los Angeles, April 4. Sec., Dr. Charles B. Pinkham, Room 527 Forum Bldg., Sacramento.

COLORADO: Denver, April 4. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

DISTRICT OF COLUMBIA: Washington, April 11. Sec., Dr. E. P. Copeland, The Rockingham.

IDAHO: Boise, April 4. Sec., Dr. Charles A. Dettman, Burke.

MINNESOTA: Minneapolis, April 4-7. Sec., Dr. Thomas S. McDavitt, 814 Lowry Bldg., St. Paul.

MISSOURI: St. Louis, March 20-22. Sec., Dr. J. A. B. Adcock, State House, Jefferson City.

MONTANA: Helena, April 4. Sec., Dr. William C. Riddell, Helena.

NEW MEXICO: Sante Fe, April 10. Sec., Dr. W. E. Kaser, East Las Vegas.

OKLAHOMA: Oklahoma City, April 11-12. Sec., Dr. Ralph V. Smith, 502 Daniel Bldg., Tulsa.

PORTO RICO: San Juan, April 4. Sec., Dr. Quevedo Baez, 66 Allen St., San Juan.

RHODE ISLAND: Providence, April 6. Sec., Dr. Gardner T. Swarts, 315 State House, Providence.

UTAH: Salt Lake City, April 3-4. Sec., Dr. G. F. Harding, 407 Templeton Bldg., Salt Lake City.

Missouri June Report

Dr. J. A. B. Adcock, secretary of the Missouri State Board of Health, reports the oral and written examination held at St. Louis, June 21-23, 1915. The total number of subjects examined in was 14; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 151, of whom 142 passed and 9 failed. Two candidates were granted reregistration licenses. One candidate's license was withheld. The following colleges were represented:

College	Year Grad.	Total No. Licensed
PASSED		
Yale University	(1907)	1
Bennett Medical College	(1914) (1915)	2
Chicago College of Medicine and Surgery	(1915)	1
Rush Medical College	(1915)	3
University of Illinois	(1914) (1915, 4)	5
University of Kansas	(1913)	3
University of Louisville	(1915)	3
Tulane University of Louisiana	(1915)	1
Barnes Medical College	(1909)	1
Ensworth Medical College	(1914)	1
Kansas City Hahnemann Medical College	(1915)	1
Marion Sims College of Medicine	(1895)	1
Missouri Medical College	(1887)	1
National University of Arts and Sciences	(1912) (1915, 31)	32
St. Louis College of Phys. and Surgs.	(1914, 2) (1915, 5)	7
St. Louis University	(1915)	29
Washington University	(1915)	25
University and Bellevue Hospital Medical College	(1900)	1
Jefferson Medical College	(1913)	1
Meharry Medical College	(1915)	8
Memphis Hospital Medical College	(1912)	1
University of West Tennessee	(1914, 3) (1915, 4)	7
Vanderbilt University	(1912) (1914) (1915, 2)	4
University of Leeds	(1911)	1
University of Constantinople	(1887)	1
FAILED		
Bennett Medical College	(1910)	1
Maryland Medical College	(1902)	1
St. Louis College of Phys. and Surgs.	(1913) (1915, 2)	3
University of West Tennessee	(1914)	2
Milwaukee Medical College	(1910)* (1911)*	2

* Graduation not verified.

Porto Rico October Report

Dr. Quevedo Baez, secretary of the Porto Rico Board of Medical Examiners, reports the practical and written examination held at San Juan, Oct. 5-9, 1915. The total number of subjects examined in was 9; total number of questions asked, 90; percentage required to pass, 75. The total number of candidates examined was 26, all of whom passed. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Bennett Medical College	(1915)	77.8
Chicago College of Med. and Surg.	(1915) 75, 76.4, 76.6, 77, 77.6, 78.3, 78.7, 81, 83.3, 87.8.	
University of Louisville	(1915)	78.1
College of Phys. and Surgs., Baltimore	(1915) 77.1, 79.5, 79.9, 81.1, 82.7, 83.2, 83.8, 86.3, 87.8.	
University of Maryland	(1915)	83.5, 83.6
Jefferson Medical College	(1915)	75.6
Medical College of Virginia	(1915)	75.1
University of Central Spain	(1915)	81.8

Book Notices

THE PRIMARY LUNG FOCUS OF TUBERCULOSIS IN CHILDREN. By Dr. Anton Ghon, O. ö. Professor of Pathologic Anatomy at the German University in Prague. English Edition. Authorized Translation by D. Barty King, M.A., M.D., M.R.C.P., Assistant Physician to the Royal Hospital for Diseases of the Chest, London. Cloth. Price, 10 shillings, 6 pence. Pp. 172, with 74 illustrations. London: J. & A. Churchill, 1916.

When a book consists of a translation by a Briton of a work published by an Austrian, which develops and recognizes as fundamental the Teutonically neglected observations of French investigators, it hardly requires this footnote, which appears at the end of the translator's preface: "Needless to say, this work was undertaken, and its publication authorized, before the outbreak of the present war." But, war or peace, the monograph by Ghon is well worthy of translation, for it presents convincingly the results of important investigations on the character of tuberculous infection in children. As the trend of opinion among students of phthisis seems to be in favor of the view that infection with tuberculosis nearly always occurs in childhood, and that this early infection determines the future of the individual as regards tuberculosis, we cannot have too much information concerning tuberculosis in the lung. Ghon's contribution consists of an analysis of the anatomic findings in 184 cases of tuberculosis in children, examined with particular reference to the pathway of infection. His large experience, of which this is only a small part, together with his well-known accuracy of observation, warrants acceptance of his results at their face value. In brief, the results are these: The common lesion of childhood is in the lymph glands about the hilum of the lung, but in most cases (92.4 per cent.) careful dissection shows a pulmonary focus which must be regarded as primary. In only 2.7 per cent. of the cases was the avenue of infection incontestably outside the lungs. Therefore the conclusion is reached that in childhood the primary infection of the lungs represents the usual form of the tuberculous infection. Furthermore, in all these children, diagnostic tuberculin reactions had been tried, and the necropsy findings corroborated the results of this test with great regularity. This is of special importance in view of the frequency of childhood infection as indicated by tuberculin reactions, and the far-reaching conclusions that have been based on this frequency of positive reactions. In only one case of all his series did Ghon fail to find tuberculosis in a child giving a positive reaction. The author has presented his work in a brief but sufficiently detailed form, and the translation is entirely satisfactory. It is an important contribution to the literature of tuberculosis, and should be examined by all interested in this subject.

GESCHICHTE DER AUGENHEILKUNDE. Von Dr. J. Hirschberg, Drittes Buch, Elfter Abschnitt—Italiens Augenarzte 1800 bis 1850. Paper. Price, 6 marks. Leipzig: Wilhelm Engelmann, 1915.

This work is a continuation of the history of ophthalmology so ably written by Professor Hirschberg for the second edition of the "Handbuch der gesamten Augenheilkunde." It is not only a biographic collection, as would be implied from the title; it is in reality an abridged history of Italian ophthalmology during the first half of the nineteenth century. Beginning with Scarpa, born in 1752, who has been called the father of Italian ophthalmology, the book contains the names and brief biographic sketches of seventy-three ophthalmologists, all of whom have contributed more or less to our present knowledge of ophthalmology. It is a little unfortunate that the arrangement is made without regard to chronological sequence. For example, Quaglino, who lived until 1894, comes near the beginning, while Quadri, whose name shares equal honors with Scarpa for brilliant achievements in the early years of the century, is not mentioned until well toward the end of the list. The various institutions in which ophthalmology is taught, with the date of founding, and the names and years of service of the professors, are also recorded. The first ophthalmologic journal

was published in 1835 by Fario; it survived only one year. No further attempt was made in this direction until 1858. At present there are six journals in existence, the oldest of which, the *Annali di Ottalmologia*, was founded in 1871, by Quaglino. It is now published under the direction of Guaita of Florence and Rampoldi of Pavia, and reflects the high standard which is universally accorded to Italian ophthalmology of the present day.

Medicolegal

Trials and Rights of Members of Medical Societies

(Reid vs. Medical Society of Oneida County et al. (N. Y.), 156 N. Y. Supp. 780)

The Supreme Court of New York, Special Term, Oneida County, holds that the plaintiff must have judgment restoring him to membership in the county society, on account of alleged irregularities in his trial on charges of unprofessional conduct in permitting certain advertising articles to appear. The court says that it assumes that the offense with which the plaintiff was charged was sufficient to justify his expulsion, if proved; that the court had nothing to do with the actual truth or falsity of the charges, but was simply to determine whether, in accordance with the constitution and by-laws of the county society, subordinate to the laws of the state, he had a fair trial: that he had notice; that he had a reasonable chance to defend himself from the charges; that proof was presented (not necessarily in accordance with legal form) to establish his guilt; that such proceedings were had before the board censors, and finally before the full meeting of the county society, as not to shock the sense of fairness. The plaintiff, having become a member of the county society, and subscribed to its constitution and by-laws, became bound thereby. The court is not unmindful of the fact that it had no right to consider the weight of the evidence presented or to substitute its judgment for the judgment of the plaintiff's fellow members; but it had the right to determine whether there was any evidence against him, and if the determination of his guilt on the charges preferred against him was totally unsustained by any evidence, such determination was contrary to natural justice, and subject to review and correction. The burden rested on the accusers to show that, at least by colorable evidence, he procured the publication of the objectionable articles. He denied the charge, and offered in evidence letters from publishers, or persons connected with several newspapers, to the effect that the charge was not true. This evidence was, at least, relevant to the issue. It was true that the letters received and offered by him were not admissible on their mere production, and it was true that their contents were hearsay; but, in fairness, if that was the reason for their exclusion, he should have been given time to produce the writers. The effect of the expulsion of a member of the medical profession from his county society is to him a very serious matter, and is far-reaching in its consequences to him, and a body having the responsibility of determining the facts in so important a trial should err on the side of enabling the accused physician every opportunity to review the charge made against his professional conduct. Moreover, the plaintiff was deprived of having his cause determined by an impartial court or jury by the action of the county society in allowing, through its presiding officer, the intemperate remarks of at least two of its members at the meeting when the plaintiff was expelled. That the two members who made the objectionable remarks were disqualified to vote on the question of the plaintiff's expulsion is too apparent for argument. It is the purpose of the state and county medical societies to keep their great profession free from incompetent and unprincipled men, and from improper practices which would tend, not only to deceive the public, but endanger health and life. But, as these medical gentlemen insist on sanitary conditions when they perform an operation, so the courts insist, on the trial of a person accused of wrongdoing, on such conditions as will insure in the end the fullest measure of justice. The plaintiff's right to a fair trial before an impartial court was of infinitely more importance than that the offense with which he was charged should be punished, and in protecting him in this right the court is protecting every member of that honorable profession from possible injustice. The Medical Society of the State of New York was improperly made a party to this action, for if he is restored to membership in the county society, he is automatically restored to membership in the state society.

Liability for Breach of Contract to Attend Patient Because Could Not Leave Another

(Hood vs. Moffett (Miss.), 69 So. R. 664)

The Supreme Court of Mississippi affirms a judgment for $150 damages in favor of Mrs. Moffett for an alleged breach of contract on the part of defendant Hood who, after having entered into a contract with the plaintiff's husband, for her benefit, to attend and render to her medical assistance at her approaching accouchement, when summoned on a Friday night said that he could not then leave another patient whom he was attending. Mrs. Moffett stated that she had given birth to a number of children, knew labor pains from past experience, and had the defendant attended her on the night or morning after he was sent for she would have been delivered of the child within two or three hours, whereas she suffered labor pains at intervals from Friday night until the following Thursday night, when she was delivered. The court says that the defendant claimed that a peremptory instruction should have been given in his favor on the ground that it is not incumbent on a physician to leave a patient who is in a precarious condition to attend one that he has previously contracted to attend. This proposition, differently expressed, amounts simply to this: If a person assumes obligations to different parties, the performance of which may become incompatible with each other, both parties being entitled in equal right, is it an excuse for a default to one party that both obligations could not be performed, and that the person bound chose to perform his obligation to the other? This question has been answered in the negative. The defendant's contract in this respect was without qualification, and the rule is that "as a man consents to bind himself so shall he be bound." Nor was there error in permitting the jury to award the plaintiff damages for mental anguish, for when physical pain is an element of damage, mental anguish accompanying it is also an element thereof, and according to the evidence of Mrs. Moffett, she suffered intense and prolonged physical pain because of the defendant's failure to attend her when requested so to do. Conceding for the sake of argument that the court below erred in instructing the jury that when the defendant found that he could not attend the plaintiff, it was his duty to have done one of two things, either send another physician or notify the plaintiff that he could not attend her, the error was not such as could be complained of by the defendant, for it was committed in his favor, since neither the sending of another physician, unless consented to by the plaintiff or her husband, nor notifying the plaintiff that he could not attend her, would have constituted a compliance with the defendant's promise. Such acts on the part of the defendant could be availed of, if at all, in mitigation of damages only. If the defendant entered into a contract to attend the plaintiff's accouchement and failed so to do without fault on the part of the plaintiff or her husband, he was liable for the injury, if any, thereby inflicted on her. The jury should not have been instructed, however, to award punitive damages. This was an action for damages alleged to have been sustained because of the breach of a contract, and the rule is, with probably two exceptions, within neither of which did this case come, that such damages are not recoverable in such an action unless the act or omission constituting the breach of the contract amounts also to the commission of a tort or wrongful act. But this error was rendered harmless for the reason that since the amount of damages awarded was only $150, it could not be said that the jury responded to the instruction and included in the verdict an award for punitive damages.

Society Proceedings

COMING MEETINGS

American Assn. of Genito-Urinary Surgs., Washington, D. C., May 9-10.
American Association of Path. and Bact., Washington, D. C., May 9-11.
American Climatological and Clin. Assn., Washington, D. C., May 9-11.
American Dermatological Association, Washington, D. C., May 8-10.
American Gastro-Enterological Association, Washington, D. C., May 8-9.
American Gynecological Society, Washington, D. C., May 9-11.
American Laryngological Association, Washington, D. C., May 9-11.
Amer. Laryn., Rhin. and Otol. Assn., W. Sul. Sprgs., W. Va., May 5-6.
American Medico-Psychological Association, New Orleans, April 4-7.
American Ophthalmological Society, Washington, D. C., May 9-11.
American Otological Society, Washington, D. C., May 8-9.
American Pediatric Society, Washington, D. C., May 8-10.
American Society of Tropical Medicine, Washington, D. C., May 9-11.
American Surgical Association, Washington, D. C., May 9-11.
American Urological Association, St. Louis, April 17-19.
Arizona Medical Association, Phoenix, April 26-27.
Arkansas Medical Society, Texarkana, May 2-4.
Association of American Physicians, Washington, D. C., May 9-11.
California State Medical Society, Fresno, April 18-20.
Cong. Am. Phys. and Surgs. of No. Am., Washington, D. C., May 9-10.
Florida Medical Association, Arcadia, May 10-12.
Georgia Medical Association, Columbus, April 19-21.
Iowa State Medical Society, Davenport, May 10-12.
Kansas Medical Society, Topeka, May 3-5.
Louisiana State Medical Society, New Orleans, April 18-20.
Mississippi State Medical Association, Greenville, May 9-11.
Missouri State Medical Association, Excelsior Springs, May 8-10.
Missouri Valley Medical Society, St. Joseph, Mo., March 23-24.
National Assn. for Study and Prev. of Tuberc., Wash., D. C., May 11-12.
North Carolina State Medical Society, Durham, April 18.
North Dakota State Medical Association, Devils Lake, May 10-11.
Oklahoma State Medical Association, Oklahoma City, May 9-11.
South Carolina Medical Association, Charleston, April 18-20.
Tennessee State Medical Association, Knoxville, April 4-6.
Texas State Medical Association, Galveston, May 9-11.

HARVARD MEDICAL SOCIETY

Meeting held Jan. 22, 1916

The President, DR. ROGER H. DENNETT, in the Chair

What is Meant by Hospital Efficiency, and Some of the Factors Which Are Often Responsible for Lack of Efficiency

DR. WINFRED H. SMITH, Johns Hopkins Hospital, Baltimore: Those who have discussed this subject have measured hospital efficiency in many different ways. The per capita cost really tells nothing, except as applied to a particular institution under consideration. The patient is the prime consideration. The primary purpose of the hospital is to treat and care for the patient, and the end-result should be all that modern skill and knowledge, supplemented by the necessary facilities, can accomplish at the hands of the carefully selected individuals composing the organization. The organization is the power that produces the results. Hospital efficiency means thoroughness, with sympathetic consideration and uniform kindness. It means the courteous reception of the patient, with due consideration to his claims to charity; prompt skilful medical and surgical attention, careful and skilful nursing, a thorough study not only of the symptoms and findings, but also of the bearing which these have on the problems of the disease, all of which means accurate and complete records; a discharge of the patient at the proper time, with a full knowledge as to his ability to carry out instructions and to the suitability of his home surroundings for continued convalescence, and the machinery with which to make proper arrangements when necessary, and throughout the whole course of hospital procedure, a careful attention to business detail, economy of time, effort and materials, at the same time avoiding any tendency to look on the patient as a mere case or number. Some of the factors which are commonly responsible for inefficiency are, first, there is a lack of funds. Second, in large cities, hospitals are located with too little consideration of the needs of the section selected, with the result that some sections have more hospitals than are needed, while other large sections are absolutely without hospital provision. Third, organization, first and last, is one of the most important factors. The board of trustees is the governing body and the final authority, and should therefore be chosen with the greatest care. The staff organization is no mean factor in hospital efficiency. No member of the staff should be eligible to the office of trustee. Appointments to the staff should be made only on merit. The superintendent should have the authority as well as the responsibility, and should at all times have the support of the trustees and of the staff.

The Dividing Line Between Medical Charity and Medical Business

DR. E. A. CODMAN, Boston: One of our pet humbugs is to confuse charity and business. Inefficiency and dishonesty in either charity or business should be equally abhorrent to our profession, and honest business will give efficient charity its full play. This is difficult under present hospital conditions. Pretense and humbug perhaps even more than commercialism tend to make one think unfavorably of his fellow men. Our present system of conducting hospitals is full of pretense and humbug. The ideals of the medical profession can be better maintained by conducting business with charity than by pretending that our charity is not business. Practically, what can the modern physician do toward the realization of these ideals? Let each hospital and each individual in each hospital put off on the man higher up every case in which he seriously doubts his own ability to effect a cure. And vice versa, let each of the "men higher up" refuse to care for the simple curable case which his juniors can treat as well as he. Most of the best men do this now, but it should be made the fashion, so that those who did not do it would become unpopular. When this is applied to individuals it will begin to be applied to hospitals. The small, poorly equipped, poorly financed nonteaching hospital should not be allowed to experiment with unusual and difficult cases. The small hospital should be encouraged to send in its bad cases to the great teaching hospitals. Let private hospitals be encouraged to treat only those cases which they are qualified to treat and render themselves subject to litigation if they are negligent or unscrupulous. We should make for the truth seeking scientific clinician a place comparable to that of the great electrical and engineering experts to whom even big business has to turn. Let the "charitable" people pay them such salaries that they in turn can be charitable if they want to, without pretending that their business is charity.

The Convalescent Field: Its New and Changing Borderlands

DR. FREDERIC L. BRUSH, Burke Foundations for Convalescents, White Plains, N. Y.: The hospital efficiencies most needing development are not now internal, but in the lines of hospital extension, in work for health outside of the main buildings. The present need is not for so many new small precarious associations, but longer, stronger extension arms to hospitals. Hospital efficiency thus covers convalescence, which is taken to include health increase, health holding and prevention of health deterioration. The larger convalescent institution, accommodating from forty to 300 or more, which might be governmental, private, corporate or a branch of a hospital organization, promises to become quite distinctively an American type of health plant, and only the formative stage has been entered. The recent extensions and plans in the convalescent field cover the following: 1. Surgical dressing cases: Wounds heal better in the convalescent home for various reasons. At the Burke Foundation we are doing 700 surgical dressings per month, and we welcome such cases as nephrectomy, empyema, recent fractures, even compound, and wounds with drains. Our troubles and failures have not been with postsurgery. 2. Heart disease: *(a)* Those with fair compensation and reserves should not be refused because labeled "heart disease," when needing convalescence for other reasons; *(b)* Those who just tire "on the job" frequently, with fairly holding compensations, should be given periodic upbuilding; *(c)* Youths should be given first place in cardiac convalescence, and many more beds should be open to them. This is to be the main point of an attack on cardiac disease. 3. We have almost no convalescent places for men, and the need is probably one-half that of women and is on the average a surer need.

4. Rheumatism. The situation is somewhat like that of heart disease, and many will be cared for along with heart disease. 5. Tuberculosis. All forms should be received freely. The quiescent may occasionally be received with precautions, for these often need in other ways precisely what the country home can give. 6. Mental convalescents. There are possibilities of bringing into the convalescent field early or "borderline," or observation mental conditions, and some of the nervous diseases. 7. Adolescence. The world over this vital age, from 12 to 16, "falls between," as to institutional care, and for well-known reasons. 8. Colored persons. There are practically 100,000 in this country, and not a convalescent bed for them. 9. Preventive convalescence. With this preventive health upbuilding there will be needed five beds where one is now needed. At a low estimate at least 10,000 persons per year should go out from the New York dispensaries alone. There is danger of overdoing convalescent provision in some directions.

The Practicability of Ratings in Appointment and Promotion of Members of the Visiting Staff

DR. ROBERT L. DICKINSON, Brooklyn: The defining of fitness is no simple matter. There is no schedule of such work and no method of charting it. Yet the claim is reasonable that nomination should be based on demonstrable performance and characteristics.

Medical Cooperation as a Test of Efficiency

DR. S. S. GOLDWATER, New York: There are two forms of cooperation for which provision should be made; first, the cooperation of the hospital with individual forces outside the institution and, second, cooperation within the institution. When the patient is brought to the hospital it is desirable that there should be some form of cooperation with the family physician. Some hospitals take the trouble to notify the physician who sends the patient as to the diagnosis, whether an operation is to be performed, and at what time it is to be done. The family physician is likewise notified of the patient's discharge. In this way the patient's relationship with the family physician will be continued, and when the patient leaves the hospital it should be kept up. In addition the family physician should have the freedom of the wards and be invited to make the rounds with the staff. In this way postgraduate instruction can be made available in a way that can be afforded by any hospital organization. The general practitioner should also have the privilege of the operating room. There should be an affiliation between independent dispensaries and hospitals. Another form of cooperation, the object of which is perhaps not so obvious, is the making of careful records of rejected cases, and thus one may be able to know what hospitals are unable to do. There should be cooperation of the hospitals with the department of health. Every case of contagious disease should not be transferred from the hospital to the board of health, regardless of the physical condition of the patient. In every hospital a special ward should be established for receiving and treating contagious diseases. If really conscientious, no hospital authorities would permit the transference of very sick patients. The hospitals should also cooperate in caring for the physical defects of school children. In from 80 to 85 per cent. of the children having defects, the parents are unable to meet the indications, and something should be done toward giving these children proper treatment. The ambulance service should be so organized that it is not necessary to call ambulances from distant parts of a city in order to transport a patient. Hospitals might combine in the use of a common power plant, kitchen, laundry, etc. Such a plan has been tried out in St. Louis, and has succeeded so well that it has been adopted in Cleveland. There should be cooperation between hospitals and medical schools for the purpose of giving to all medical students the opportunity for hospital training. I would suggest that the department of health accept no man for diagnostic work who has not had at least one year of hospital training. This would raise the standard of men in the department so that holding such a position would be considered an honor. Coming to a consideration of the subject of cooperation within the hospital, there should be cooperation between the outpatient and inpatient departments; the clinical department should be in close touch with the laboratory. All available clinical aids should be given the laboratory man. In the outpatient organization there should be better laboratory and therapeutic facilities afforded than is often the case. A hospital organization should be so complete and its parts so well correlated that every patient coming to the hospital or dispensary should get what he requires.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

March, XI, No. 3, pp. 177-244

1 *One Hundred Cases of Infantile Type of Hereditary Syphilis. B. S. Veeder and P. C. Jeans, St. Louis.
2 *Lobar Pneumonia in Childhood; Roentgen Ray Findings and Explanation of Bronchial Signs. H. H. Mason, New York.
3 Cases of Recurrent Hilus Infiltration. Unusual Form of Tuberculosis in Children. H. Wessler and M. H. Bass, New York.
4 Mesenterium Commune with Abnormal Course of Jejunum. A. Strauch, Chicago.
5 Hemorefractometry in Infectious Diseases of Children. Mello-Leitao, Minas Geraes, Brazil.
6 *Study of Blood in Tuberculous Meningitis. E. A. Morgan, New York.
7 *Rapid Method for Determination of Fat in Feces. C. H. Laws, Ann Arbor, Mich., and W. R. Bloor, Boston.
8 Cases of Sialolithiasis and Sialodochitis in Childhood. H. Neuhof, New York.

1. **Hereditary Syphilis.**—A syphilitic rash or a cutaneous lesion of some type was present in 77 of the cases analyzed by Veeder and Jeans and absent in 23. A macular, or slightly maculopapular rash occurred in 14 cases, while in 48 the eruption was confined largely to an exfoliative or desquamative dermatitis involving the soles of the feet and the palms of the hands. Rhinitis was present to a greater or less degree in 74 cases and was noted as absent in 26. In 82 cases the spleen was definitely palpable while in 18 it could not be felt on physical examination. Epiphysitis was present in 14 cases and absent in 86. In 8 of the 14 cases the epiphysitis developed between the fourth and sixth week. Of 77 infants whose weight was recorded in the histories, 7 were overweight, 10 of average weight and 60 below average weight. Eighty-one, or 85 per cent. of the infants developed symptoms in the first two months of life and about two thirds of these within the first month. The development of symptoms was delayed until late in infancy in a few cases. The Wassermann reaction was made in 82 cases. It was positive in 76 cases, or 92.6 per cent.; doubtful in 1 case, or 1.3 per cent.; negative in 5 cases, or 6.1 per cent. In 18 cases no test was made for various reasons—usually because of very small babies with active signs whose mothers gave a plus Wassermann. The mortality figure for the series reaches 40 per cent., and this despite the fact that many of these infants have been treated intensively with both neosalvarsan and mercury. The deaths are almost entirely confined to the first half year of life.

2. **Lobar Pneumonia.**—Thirty-seven cases of lobar pneumonia were studied with the Roentgen rays by Mason, most of them repeatedly. All thirty-seven cases showed a definite shadow, which was always so placed that it touched the pleura at some point. The early shadows were triangular in shape, with their bases on the pleura and their apices separated from the region of the root by normal lung. In their later development the shadows extended in size and became uniform from the periphery to the root of the lung. When the shadow involved this entire stretch, bronchial voice and breathing were present, but not otherwise. It is believed that the inference is justified that the dimensions of the shadows correspond to the extension of consolidation.

6. **Blood in Meningitis.**—Two hundred and fifty-two blood counts were made by Morgan on 169 cases of tuberculous

meningitis. The average leukocyte count was 20,900 per c.mm. with an average polynucleosis of 72.6 per cent. Only ten, or 4 per cent., of the counts were below 10,000, and twenty, or 8 per cent., were above 30,000. The lowest total count was 5,400, and the highest 70,000—the latter occurring in an uncomplicated case. The polymorphonuclear percentage ranged from 26 to 91. The age of the children varied between 2 months and 4½ years. It was thought that the variations in the blood picture might be explained by the presence or absence of an added infection, but an attempt to establish this relationship was not successful. However, the total leukocyte count and the proportion of polymorphonuclear cells vary with the stage of the disease; namely, both counts increase as the disease advances. There is a relative but not absolute diminution in the mononuclear elements of the blood. Morgan found a definite relationship between the intensity of the tuberculin skin reaction, on the one hand, and the total leukocyte count and polymorphonuclear percentage on the other. Diminution in the former is usually accompanied by an increase in the latter, both being evidences of a failing resistance by the body to the tuberculous infection.

7. **Fat in Feces.**—By means of the nephelometric principle, which has been used by Bloor for the determination of the fat in blood and milk, Laws and Bloor have found it possible to make an accurate determination of the fat in the stools in about one hour. The method consists essentially in extracting directly with acidified alcohol and ether, filtering the extract, then precipitating the fat in a watery solution and comparing the cloudy suspension so obtained with that of a similarly prepared standard solution.

American Journal of Public Health, Boston

February, VI, No. 2, pp. 97-188

9 Public Health Publicity; Art of Stimulating and Focusing Public Opinion. E. A. Moree, New York.
10 Value of Credit Balance in Public Health Administration. C. J. Hastings, Toronto, Canada.
11 Cancer and Public Health. F. C. Wood, New York.
12 Bacterial Examination of Sausages and Its Sanitary Significance. W. E. Cary, Chicago.
13 Workshop Education in Hygiene. R. C. Routsong, Dayton, Ohio.
14 Investigation Into Relationship of Flies and Diarrheal Disease in Children Under One Year of Age in New York City. P. S. Platt, New York.
15 Rural Sanitation. H. A. Streeter, Marblehead.
16 Proposed Alterations in Procedure for Standard Methods of Water Analysis. E. Bartow, Urbana, Ill.

Annals of Ophthalmology, St. Louis

January, XXV, No. 1, pp. 1-218

17 Trephining vs. Iridectomy in Glaucoma. H. W. Woodruff, Joliet, Ill.
18 Report on Gold (Mule Shoe) Drain for Chronic Glaucoma; New Method to Avoid Usually Employed Flap. A. E. Prince, Springfield, Ill.
19 Surgical Treatment of Retinal Detachment. E. S. Thomson, New York.
20 Business and Office Methods in Special Practice. L. Emerson, Orange, N. J.
21 Arrest of Cataract at Early Stage. E. L. Jones, Cumberland, Md.
22 Management of Eyelids During Cataract Operation. D. T. Vail, Cincinnati.
23 Some Impressions of Expression of Cataract With Sliding Conjunctival Flap. H. Gifford, Omaha.
24 Use of Lead Styles in Treatment of Diseases of Nasal Duct. H. Moulton, Fort Smith, Ark.
25 Ocular Tuberculosis of Nasal Origin. W. H. Luedde, St. Louis.
26 Tuberculosis of Retina, Recurring Hemorrhage and Retinitis Proliferans. E. Jackson, Denver.
27 Traumatic Rupture of Eyeball, Complete Aniridia; Preservation of Lens, With Practically Normal Vision. D. F. Harbridge, Phoenix, Ariz.
28 Use of Optochin in External Eye Diseases, Excluding Pneumococci Infections. J. S. Wyler, Cincinnati.

Boston Medical and Surgical Journal

February 24, CLXXIV, No. 8, pp. 259-300

29 How May You Assist Medical Department of United States Army? W. O. Owen, Washington, D. C.
30 Classification of Reformatory Prisoners. G. G. Fernald, Concord.
31 *Venesection as Therapeutic Measure. C. H. Lawrence, Jr., Boston.
32 Brief History of Gastric Intubation. F. H. Garrison, Washington, D. C.
33 Ringworm of Hands and Feet. J. E. Lane, New Haven, Conn.
34 What Goiters Demand Operation? F. H. Lahey, Boston.
35 Physiologic Considerations in Differential Diagnosis of Neurasthenic, Hysterical and Psychotic Symptoms. D. Gregg, Brookline.
36 Case of Chronic Nephritis with Uremia. L. Baumann and F. Stevens, Iowa City, Ia.
37 Treatment of Psoriasis with Horse Serum. A. P. Perry, Boston.

March 2, No. 9, pp. 301-336

38 Relation of Dulness to Heart Outlines. G. C. Shattuck, Boston.
39 Neurologic Surgery in War Hospital. E. C. Cutler, Boston.
40 Present Status of Gallstone Diagnosis by Roentgen Ray. F. W. O'Brien, Boston.
41 Bridging Gap in Outpatient Service. H. F. Day, Boston.
42 *Congenital Elevation of Scapula. F. E. Peckham, Providence, R. I.
43 Diagnosis and Treatment of Diabetes. M. M. Brown, North Adams.

31. **Venesection as Therapeutic Measure.**—Lawrence favors venesection, performed under proper indications. In the presence of dilatation of the heart, renal toxemia, hypertension or a combination of these conditions may be expected to act more promptly and more surely than drugs. It lowers blood pressure and at the same time produces a more efficient circulation when performed in cases of hypertension, but does not, in therapeutic "doses," lower normal arterial tension. Lawrence insists that it should never be performed in the absence of definite indications, but should not be withheld until the hope of success for any measure is gone. The amount of blood to be withdrawn is to be decided by the point at which relief is obtained. The error is generally on the side of too small an amount. Repeated blood letting, when indicated, does not seem to have any ill effects on the composition of the blood.

42. **Congenital Elevation of Scapula.**—In a case cited by Peckham he excised a wedge-shaped piece from the trapezius muscle to pull down the scapula. A vertical incision was made between the posterior border of the scapula and the spinous processes. The trapezius was divided at the base of the spine of the scapula, and a V-shaped wedge of muscle removed. A suture was then taken through all of the tissues, sending the needle close to the bone, at the inferior angle and passing it, also close to the bone, through all tissues anywhere in the region of the tenth, eleventh or twelfth spinous process as the fixed point.

Florida Medical Association Journal, Jacksonville

February, II, No. 8, pp. 225-256

44 Sex Question in Public Health. I. Dyer, New Orleans.
45 Pellagra: Multiform Consideration. J. H. Randolph, Jacksonville.
46 What Can Be Done for Pellagra Situation in Florida. H. Hanson, Jacksonville.
47 Pellagra. J. G. DuPuis, Lemon City.
48 Id. J. Reeve, DeLand.
49 Dermatologic Aspect of Pellagra. J. L. Kirby-Smith, Jacksonville.

Journal of Cutaneous Diseases, New York

February, XXXIV, No. 2, pp. 55-158

50 *Anaphylactic Phenomenon in Eczema, Etiology and Treatment of Disease. C. P. White, Boston.
51 *Erythematous and Urticarial Eruptions Resulting From Sensitization to Certain Foods. W. L. McBride and E. H. Schorer, Kansas City, Mo.
52 Case of Immunity to Scabies. D. W. Montgomery, San Francisco.
53 Case of Early Mycosis Fungoides Clinically Indistinguishable From Parapsoriasis of Brocq. F. Wise and I. Rosen, New York.

50. **Anaphylaxis in Eczema.**—In the series of cases studied by White there were twenty-four cases of moist, oozing, crusting eczema. Four patients gave entirely negative tests and in six the controls were positive. Fourteen patients reacted positively to fat-free milk; nine to egg albumin; thirteen to salt-free butter, and six to lactose or to oatmeal water. There were twenty-four cases of red, infiltrated, dry and scaling eczema. Five patients gave entirely negative tests and in nine the controls were positive. Sixteen patients reacted positively to fat-free milk; twelve to egg albumin; sixteen to salt-free butter, and seven to lactose or to oatmeal water. There were three cases of papular eczema. None gave entirely negative tests and in two the controls were positive. Two patients reacted positively to fat-free milk; three to egg albumin, two to salt-free butter, and two to lactose or to oatmeal water. There were two cases of lichenoid eczema. One patient gave entirely negative tests and the other reacted positively to fat-free milk. There were

two patients in whom the only symptom was an infiltrated, leathery skin. One of these individuals gave entirely negative tests and the other reacted positively to fat-free milk, to egg albumin and to salt-free butter. There was one patient who exhibited merely excoriations due to intense pruritus. This individual reacted positively to egg albumin and to salt-free butter and one of the controls was also positive.

From these facts and from other investigations not detailed White makes the following deductions on the question of food in its relation to chronic eczema at various ages of life. Eczematous infants usually present in their stools an excess of fat or of starch. An excess of the former element generally means a moist eczema; of the latter, a dry type. When eczema is present and neither fat nor starch appears in excessive amounts in the feces, look for susceptibility to egg albumin or to milk, or, in default of all these more common causes, to a diminished thyroid secretion. Susceptibility to egg or to milk can be demonstrated by the new method of food inoculations. In chronic eczema the great majority of its victims seem to exhibit anaphylactic reactions to one or more types of food substances. Approximately 20 per cent. of eczematous individuals do not appear sensitized to any of the common food types. In practically 30 per cent. of these eczematous patients one or more of the controls proved positive. In the few cases in which both stool examination and cutaneous tests were made there was one contradictory finding. Fat was excessive in the stool and negative on the skin, while starch was present in the feces and negative cutaneously. It is impossible to tell from the type of eczema present what food elements will give positive skin reactions.

51. **Sensitization to Foods.**—Varieties of fundamental foods, whether they be fats, carbohydrates or proteids, produce untoward symptoms. Of these the proteids seem to have a selective action for producing urticarial or erythematous manifestations. Until one has analyzed the histories of a sufficient number of cases of these toxic erythemata, the authors claim that it is impossible to realize the constancy of symptoms produced by any one food and the variations of manifestations of the different foods. Their data are based on observations in patients varying in age from 7 months to 60 years.

Each food produces fairly constant skin lesions. (*a*) Urticaria occurs more frequently than erythemata; fish, tomatoes and cheese only producing urticaria, while cereals and pork produce erythemata in a considerable proportion of the cases. (*b*) Tomatoes and cereals usually produce these lesions within an hour after ingestion. (*c*) The eruptions usually persist less than twenty-four hours. (*d*) The peculiar reactions on ingestion of eggs, cereals and pork are inherited in a considerable percentage of the cases. (*e*) The skin manifestations in more than one half of their cases of sensibility to egg ingestion were accompanied by cough and dyspnœa. Most, but apparently not all, urticarias and erythemata following ingestion of these proteids are due to phenomena similar to those observed in anaphylaxis. The etiologic factors are summarized by McBride and Schorer as follows: *A.* Sensitization or true anaphylaxis to (1) foods as such, (2) foods as changed by parasites, (3) foods as changed during disease. *B.* Consumption of partially decomposed or spoiled foods. *C.* Simple idiosyncrasy. To determine the particular food causing the manifestations, feeding and injection tests are of greatest importance. Parasites and other causes of disease must be looked for. Probably the Abderhalden tests and antitrypsin determinations may prove of value. Treatment should be specific. After getting rid of parasites and disease, if there still is hypersensibility, then immunization by feeding is usually, but not always, possible.

Journal of Experimental Medicine, Baltimore

March, XXIII, No. 3, pp. 265-429

54 Reactions Between Bacteria and Animal Tissues Under Conditions of Artificial Cultivation. Bactericidal Action in Tissue Cultures. H. F. Smyth, Philadelphia.

55 Id. Action of Bacterial Vaccines on Tissue Cultures in Vitro. H. F. Smyth, Philadelphia.

56 Id. Cultivation of Tubercle Bacilli With Animal Tissues in Vitro. H. F. Smyth, Philadelphia.

57 Aberrant Intestinal Protozoan Parasites in Turkey. T. Smith, Princeton, N. J.

58 Regenerated Epithelium in Chronic Uranium Nephritis. J. Oliver, San Francisco.

59 *Studies on Treponema Pallidum and Syphilis. Spirocheticidal Antibodies Against Treponema Pallidum. H. Zinsser and J. G. Hopkins, New York.

60 Id. Individual Fluctuations in Virulence and Comparative Virulence of Treponema Pallidum Strains Passed Through Rabbits. H. Zinsser, J. G. Hopkins and M. McBurney, New York.

61 Id. Difference in Behavior in Immune Serum Between Cultivated Nonvirulent Treponema Pallidum and Virulent Treponemata From Lesions. H. Zinsser, J. G. Hopkins and M. McBurney, New York.

62 *Experimental Study of Parotitis (Mumps). M. Wollstein, New York.

63 *Etiology, Mode of Infection and Specific Therapy of Weil's Disease (Spirochetosis Icterohemorrhagica). R. Inada, Y. Ido, R. Hoki, R. Kaneko and H. Ito, Fukuoka, Japan.

64 *Method for Rapid Preparation of Antimeningitis Serum. H. L. Amoss and M. Wollstein, New York.

65 Influence of Typhoid Bacilli on Antibodies of Normal and Immune Rabbits. C. G. Bull, New York.

59. **Spirocheticidal Antibodies Against Treponema Pallidum.**—Zinsser and Hopkins believe that their experiments have shown that the serum of rabbits and sheep immunized with cultures of *Treponema pallidum* acquires spirocheticidal properties for these culture spirochetes. The normal serum of these animals also possesses spirocheticidal action if used in sufficient quantities, and the action of the immune serum represents probably an increase of the antibodies normally present. Both normal and immune spirocheticidal properties are destroyed by heating to 56 C. The spirocheticidal action of the immune serum can be reactivated by the addition of fresh normal serum of the same species, insufficient in amount to exert a spirocheticidal effect by itself. The structure of these spirocheticidal bodies, therefore, is entirely analogous to that of the well known bactericidal antibodies known to exist in antibacterial serum.

62. **Experimental Study of Parotitis (Mumps).**—Wollstein's experimental research demonstrated that cats injected into the parotid gland and testicle with a bacterial sterile filtrate of the salivary secretion of children in the active stage of parotitis or mumps can be made to develop a pathologic condition having several points of resemblance to the condition present in mumps in human beings. The intraparotid and intratesticular injections of extracts of normal parotid gland and testicles may cause a mild rise of temperature and leukocytosis of brief duration, but swelling and tenderness are absent. The intraparotid and intratesticular injections of filtrates of normal saliva may cause a mild rise of temperture of very brief duration, but leukocytosis, swelling and tenderness do not appear. The pathologic conditions set up by the filtrate derived from the salivary secretion of cases of acute parotitis are intensified by successive transfers through a small series of cats of the extract and emulsion of the parotid gland and testicle previously inoculated. The pathologic changes are also prevented or reduced when the extract or emulsion is previously incubated with a quantity of blood serum obtained from a cat which has survived inoculation. Normal serum, on the other hand, has no such inhibiting effect. The deduction from these experiments is to the effect that the salivary secretion in parotitis or mumps contains a filterable substance capable of setting up a series of definite pathologic conditions when inoculated into the testicle and parotid glands of cats. Whether this active material is a micro-organism and if so whether it is the specific microbic cause of parotitis or mumps remains to be ascertained.

63. **Weil's Disease (Spirochetosis Icterohemorrhagica).**—In the course of investigations of that endemic disease of portions of Japan, which agrees clinically with Weil's disease, so-called, the authors discovered a spirochetal micro-organism which is now believed to be the cause of the disease. They have named it *Spirocheta icterohemorrhagia.* The spirocheta lives in the blood outside the cellular elements and in various organs and tissues. The infection occurs probably through the alimentary canal. It may, however, sometimes enter through the skin, as at times the disease begins with local swelling of the lymph glands. Among fifty-five cases admitted to the clinic, only a few indicated cutaneous origin.

Direct infection from man to man is rare. The mosquito and flea do not play a part in the propagation of the disease. The urine contains the spirochetes, beginning at an early stage of the disease, but in such small numbers as to make detection by the dark field microscope difficult. However, from the thirteenth to the fifteenth day of illness, at the time that the immune substance appears in the blood, they become numerous and are easily discovered. After the twenty-fourth to the twenty-fifth day the spirochetes begin to diminish in number and to assume a degenerative form, while they disappear completely from the urine before the fortieth day of illness. Feces from eight patients were inoculated into guinea-pigs on ten different occasions with one positive result. Sputum from two patients was injected into the guinea-pigs on three occasions. A positive result was obtained once in a case in which the sputum was bloody. Two inoculations with vomitus gave no result. A substance which has bactericidal and bacteriolytic action over the spirocheta appears in the blood.

The immunity endures for a long period of time. The disease occurs frequently among coal miners who work in that part of a mine which is inundated with water got rid of by pumping. It is, therefore, necessary to remove the water and then to disinfect the ground, when it is found that the disease occurs among the workmen who work at certain definite places in the mines. Lime is effective for the disinfection of the ground. It is also necessary to avoid infection through the healthy skin and the alimentary canal. Thus, when the infected locality is large so that it cannot be disinfected thoroughly, recourse must be had to the method of active immunization. The spirochetes are removed from the blood by salvarsan. The serum treatment of the experimentally infected animals has, so far, given satisfactory results and affords a good basis for the clinical use of the serum treatment on man. The serum treatment is not suitable for cases which suffer relapses, but may be considered hopeful for cases which have already developed an immune body in the course of the disease, with lasting immunity. The authors have also immunized horses for the purpose of obtaining an immune serum and they have had at least a partial success with horse serum. In a case in which it was administered subcutaneously the spirocheta disappeared from the blood within twenty-four hours.

64. **Rapid Preparation of Antimeningitis Serum.**—Potent antimeningitis serum has been produced safely in the horse by Amoss and Wollstein by the method of three successive intravenous inoculations of living meningococci and parameningococci repeated at stated intervals. Sudden and alarming symptoms and sudden death are avoided by employing first a desensitizing injection and then by adjusting the doses according to the febrile reaction and by making the highly diluted injections slowly. By inoculating alternately several strains of living meningococci and parameningococci, and the autolyzed products of each, a polyvalent serum of high titer can be produced in eight to twelve weeks instead of in the ten months required by the subcutaneous method.

Journal of Infectious Diseases, Chicago

March, XVIII, No. 3, pp. 239-334

66 *Examination of Urine and Feces of Suspect Typhoid Carriers; Report on Elaterin Catharsis. F. O. Tonney, F. C. Caldwell and P. J. Griffin, Chicago.
67 *Bactericidal and Protozoacidal Activity of Emetin Hydrochlorid in Vitro. J. A. Kolmer and A. J. Smith, Philadelphia.
68 Bactericidal and Protozoacidal Activity of Emetin Hydrochlorid in Vivo. J. A. Kolmer and A. J. Smith, Philadelphia.
69 Natural Resistance of Pigeon to Pneumococcus. P. Kyes, Chicago.
70 Sanitary Control of Swimming Pools. M. Levine, Ames, Iowa.
71 Experimental Cholera Carriers. O. Schöbl, New York.
72 *Localization of Streptococci in Eye. E. E. Irons, E. V. L. Brown and W. H. Nadler, Chicago.

66. **Urine and Feces in Suspect Typhoid Carriers.**—On the basis of the fact that postmortem examinations of typhoid patients commonly demonstrate the presence of typhoid bacilli in largest numbers in the small intestine, whereas they are seldom found in the colon, a plan was evolved by the authors of using, in carrier cases, a suitable cathartic to bring down the contents of the small intestine. The selection of such a cathartic involved two essential considerations: (1) The hydrogogue cathartic selected, must be sufficiently powerful to empty the bowels thoroughly and to bring down the contents of the small intestines, and (2) it must be devoid of antiseptic properties. Elaterin appeared to meet both these requirements satisfactorily. The authors' experience with the administration of hexamethylenamin to urinary typhoid carriers indicates that typhoid bacilli are not demonstrable in the urine after recent administration of this drug.

67. **Microbicidal Action of Emetin in Vitro.**—According to Kolmer and Smith emetin hydrochlorid possesses bactericidal properties, but prolonged contact with bacteria is required before this action becomes apparent. A 5 per cent. solution of emetin failed to kill *B. typhosus* in fifteen minutes, but with a special technic, in which the drug remains in contact with the test micro-organisms, emetin proved about equal to, or even on occasion five times more antiseptic and germicidal than corresponding dilutions of pure phenol. The bactericidal activity of emetin is more apparent in fluid than it is in solid culture media. In an emulsion of pus and various bacteria from pyorrhea alveolaris a 2 per cent. solution of emetin required forty-five minutes to effect sterilization, whereas a corresponding dilution of phenol proved germicidal in five minutes or less; a 0.5 per cent. solution of emetin required one and a half hours, and a corresponding dilution of phenol, forty-five minutes, to sterilize the emulsion. Emetin is highly amebacidal. The logical treatment of pyorrhea alveolaris should consist primarily in its local application combined with hypodermatic administration, especially in severe infections or in those accompanied by systemic complications.

72. **Localization of Streptococci in Eye.**—The left eye of a patient suffering from a chronic dacryocystitis became acutely inflamed (iridocyclitis), April 11, coincidently with an acute exacerbation of the inflammation of the tear sac. Hemolytic streptococci isolated from the tear sac April 28, produced typical iridocyclitis in 3 of 4 rabbits injected intravenously. Hemolytic streptococci isolated from the tear sac May 24, produced iridocyclitis in 2 of 4 rabbits injected. Cultures of hemolytic streptococci from the tear sac taken on May 26, May 28, June 2, June 7 and June 16, failed to produce iridocyclitis in a total of 22 rabbits, whether injected with other organisms from broth culture inoculated directly from the patient, or in pure culture after isolation on blood agar. It is the opinion of the authors that the failure of later cultures to produce iritis was not fortuitous, but more probably due to some change in the invasive power of the organism for ocular tissue seems evident from the fact that whereas in the first 2 series, 5 of 8 rabbits injected developed iridocycyitis, in the later five series of cultures 22 rabbits showed no such lesions. Furthermore, in the later experiments 24 other rabbits received the same streptococcus either in pure culture or with other organisms, without the production of typical iridocyclitis, such as was observed in the first 5 rabbits. The ability of the cultures to produce lesions of the eye was lost also in transfer from rabbit to rabbit, although iritis was produced in Rabbit 26 by intravenous injection of the hemolytic streptococcus from the eye of Rabbit 10. This loss of power to produce iritis in rabbits was not accompanied by any demonstrable decrease in virulence for rabbits.

In cultures the quality of localization in the eye was lost after the third or fourth subculture, usually within very few days after isolation. In the case of the first rabbits injected, however, cultures produced iritis seventeen days after isolation from the patient. Attempts to obtain a return of invasive power for tissues of the eye in strains of streptococci which had lost it, by growing the organisms in the living eye, were unsuccessful in one series after passage through 5 animals, and in one series after passage through 7 animals. These experiments seem to indicate that the invasive power of an organism for special tissue may change within a short period of time during residence in the original host, during animal passage, and in culture, without pronounced or constant changes in cultural characteristics, or in general virulence for animals.

Laryngoscope, St. Louis

February, XXVI, No. 2, pp. 81-152

73 Successful Intranasal Treatment of Affections More or Less Remote From That Organ. E. Mayer, New York.
74 Blood Clot Dressing in Closing Wound in Operations for Simple Mastoid Abscess. K. K. Wheelock, Fort Wayne, Ind.
75 Ideal Mastoid Operation. H. O. Reik, Baltimore.
76 Turbinal Origin of Bleeding Polypus of Nose. T. Matsui, Fukuoka, Japan.
77 Bloodless Method of Enucleating Tonsils. E. T. Smith, Hartford, Conn.
78 Two Cases of Tic Douloureux of Sphenoidal Inflammatory Etiology. G. Sluder, St. Louis.
79 Secondary Hemorrhage Following Posterior Tip Operation. Sodium Citrate Method of Blood Transfusion. H. Hays and R. Lewisohn, New York.

Medical Record, New York

February 26, LXXXIX, No. 9, pp. 353-398

80 Persistent Development Anomalies of Position of Large Intestine With Special Reference to Ascending Colon and Cecum. R. H. Fowler, Brooklyn.
81 Fair Face of Nature. W. P. Cunningham, New York.
82 Neurotic Manifestations in Children. A. Stern, New York.
83 How Can Physician's Total Income Be Increased? T. F. Reilly, New York.
84 Bacteriology of Recent Grip Epidemic. C. H. Nammack, New York.
85 Health Insurance and Prevention of Tuberculosis. J. B. Andrews, New York.

Modern Hospital, St. Louis

March, VI, No. 3, pp. 153-234

86 Architecture and Costs of Ithaca City Hospital. O. H. Waltz, A. T. Kerr and W. A. Higgins, Ithaca, N. Y.
87 Hospital Laboratory: Its Purposes and Methods. R. M. Pearce, Philadelphia.
88 Study of Plans for Large Modern Hospital. S. Lambert, New York.
89 Treatment of Syphilis in General Hospital. J. H. Stokes, Chicago.
90 Few Problems of Small Hospital Management. B. Golightly, Birmingham, Ala.
91 Tent Colony of Massachusetts General Hospital. H. W. Hersey, Boston.
92 Small Hospital With Minimum of Administrative Space. D. A. Bohlen, Indianapolis.
93 Compulsory Health Insurance for Every Individual. O. S. Halsey, New York.

New Mexico Medical Journal, Las Cruces

February, XV, No. 5, pp. 167-201

94 Enuresis, Habit or Disease? C. E. Lukens, Albuquerque.
95 Wassermann Efficiency. J. R. Van Arta, Albuquerque.
96 Specifics in Medicine. C. F. Montgomery, Roswell.
97 Remote Effects of Electric Shock. H. A. Ingalls, Roswell.
98 Chorea. C. M. Yater, Roswell.

New York Medical Journal

March 4, CIII, No. 10, pp. 433-480

99 *Gallbladder Diseases. C. H. Mayo, Rochester, Minn.
100 Gallstone Disease. B. T. Tilton, New York.
101 Cerebrocerebellar Ataxia. A. Gordon, Philadelphia.
102 Progress of Treatment of Skin Diseases. G. M. MacKee, New York.
103 Recovery of Streptococcus Viridans from New York Street Dust. W. C. Thro, New York.
104 Methods of Examination in Gastro-Intestinal Cases. W. V. Ewers, Rochester.
105 Bronchiectasis. E. H. Mayne, New York.
106 Diet in Heat Insufficiency. N. B. Potter, New York.
107 Diet in Arteriosclerosis. L. F. Bishop, New York.
108 Poisonous Proteins. (To be continued.) V. C. Vaughan, Ann Arbor, Mich.
109 Susceptibility of Man to Foreign Proteins. W. T. Longcope, New York.

99. **Gallbladder Diseases.**—Appreciation of the fact that infection is the prime factor in gallbladder disease has revolutionized the surgical treatment of this condition at the Mayo clinic. The mortality following cholecystectomy is less at present than that following cholecystostomy (1.2 per cent. against 3.4 per cent.) for the last three years, or including all cholecystectomies 1.5 per cent. From a series of form letters of inquiry sent to consecutive groups of patients who had been operated on by cholecystostomy during the past several years—none more recent than one year—242 replies were received, which showed that 53 per cent. of these patients were cured, 38 per cent. improved, and 9 per cent. not improved. Of the cured patients 129, 49 per cent. had stones, 11 per cent. had stones and empyema, 18 per cent. stones and cholecystitis, and 22 per cent. cholecystitis. From a series of form letters of inquiry sent to patients who had been operated on by cholecystectomy during the past several years—none more recent than one year—219 replies were received, which showed that 71 per cent. of the patients were cured, 22 per cent. improved, and 7 per cent. not improved. Of the improved patients, 48 or 57 per cent. had stones and cholecystitis, and 43 per cent. had cholecystitis alone.

Oklahoma State Medical Association Journal, Muskogee

March, IX, No. 3, pp. 53-79

110 Neglected Prostate. A. L. Blesh, Oklahoma City.
111 Facial Paralysis; Operative Treatment. G. A. Wall, Tulsa.
112 Fungus of Brain Following Injury; Report of Case. C. S. Neer, Vinita.
113 Fracture of Hyoid Bone; Report of Case. R. L. Hull and J. A. Brooke, Oklahoma City.
114 Organized Medicine. W. L. Moore, Broken Bow.

Southwest Journal of Medicine and Surgery, El Reno, Okla.

February, XXIV, No. 2, pp. 33-68

115 Heat in Treatment of Carcinoma of Cervix. C. C. Nesselrode, Kansas City, Kan.
116 Diagnosis and Medical Treatment of Gastroduodenitis. F. B. Erwin, Wellston.
117 Diagnosis of Gastric and Duodenal Ulcers. H. D. Walcott, Dallas, Tex.
118 Progress in Prostatic Surgery. C. Capell, Kansas City, Mo.
119 Etiologic Factors of Vomiting During Pregnancy and Measures to Relieve Them. J. D. Seba, Bland, Mo.

West Virginia Medical Journal, Huntington

March, X, No. 9, pp. 291-326

120 Cause and Treatment of Grippe With Special Reference to Present Epidemic. C. P. Showalter, Clarksburg.
121 Importance of Acute Otitis Media. C. C. Jones, Cincinnati.
122 Bronchopneumonia. W. W. Morton, Bluefield.
123 Wassermann Reaction and Its Application. J. E. Norman.
124 Appendicitis. I. Hardy, Morgantown.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

February 12, I, No. 2876, pp. 225-260

1 *Trench Fever. J. W. McNee, A. Renshaw and E. H. Brunt.
2 Antenatal Clinics and Prematernity Practice at Edinburgh Royal Maternity Hospital in Years 1909-1915. (To be continued.) J. W. Ballantyne.
3 Brilliant Green as Antiseptic. A. Leitch.
4 *Physics of Surgical Dressing. A. Primrose.

1. **Trench Fever.**—This disease appears to be a definite entity and of infective nature, as is proved by its ready transmission from one person to another by the blood. The authors' two clinical types of the disease: (*a*) a short fever of about a week's duration, followed frequently after a few days by a short single relapse; (*b*) a longer illness characterized above all by the number, sharpness and periodicity of the relapses. The symptoms of both types are clinically identical, the most constant and characteristic being headache and pain in the legs and small of the back. The two types are, in their opinion, merely varieties of one and the same disease. The incubation period varies, possibly with the dose of the infective virus introduced. The shortest incubation period in the authors' experimental transmissions was six days, and the longest twenty-two days. The disease is transmissible in every case by the whole blood, whether injected intravenously or intramuscularly. The disease is not transmissible by the serum. In one instance in which the serum proved infective hemolysis of corpuscles had occurred before injection. All experiments with filtered serum were negative. The plasma was infective in one experiment, but hemolysis of red cells had occurred, so that the plasma was hemoglobin tinted. The filtered plasma in another test was not infective. These results seemed to point to the virus being contained within the blood corpuscles themselves, whether leukocytes or red cells. Blood corpuscles, after washing five times in saline to remove the plasma, were still found to be infective. Very many blood films at all stages of the disease have been examined without a parasite being detected. Blood corpus-

cles were broken down, and the hemoglobin tinted fluid passed through a filter in an attempt to prove the virus an ultramicroscopic one confined to the corpuscles. The fluid when injected, however, was not found to be infective. The only constant morphologic change in the blood is the presence of punctate basophilia. This was so marked in some cases as to require very careful investigation to differentiate it from an intracellular parasite. The blood counts, differential and ordinary, did not yield any important results. As regards the means by which the disease is transmitted in nature no evidence is offered.

4. **Physics of Surgical Dressing.**—In Primrose's opinion the best dressing for septic wounds is a moist dressing, and he has found the hypochlorous acid solution wonderfully effective. The moist dressing is applied directly to the wound, and over this dry gauze. Primrose urges that everything be done to favor free evaporation from the surface and absorption into the dressing, which should be frequently changed. He is convinced it would be greatly to the advantage of the wounded if impermeable protective and oil silk were entirely removed from the surgical armamentarium of the army. Their use in surgery is very restricted, and as they are employed in military surgery at present they do far more harm than good.

Dublin Journal of Medical Science

February, III, No. 530, pp. 71-154

5 Electrocardiograph: Notes of Cases. J. A. Lindsay.
6 Effect of War on Medical Profession. C. M. Benson.
7 Physically Defective Children and Problem of Their Education. W. A. Winter.

Glasgow Medical Journal

February, LXXXV, No. 2, pp. 81-160

8 Delay in Breech Presentations from Extension of Legs. R. Jardine.
9 Neurasthenic Element in Disease. J. Craig.
10 Aural School Clinic. J. K. Love.
11 *Treatment of Tuberculous Sinuses with Menthol. C. Bennett.

11. **Tuberculous Sinuses Treated with Menthol.**—Bennett speaks well of the results obtained from the use of menthol in the treatment of tuberculous sinuses. A prolonged trial of this substance in a large number of cases has left no doubt in his mind as to its efficacy and reliability, and he now has no hesitation in using it exclusively. Injurious action on the surrounding skin and the possibility of undesirable after-effects from absorption of the drug were conspicuous by their absence. The granulations of the sinuses remain of a healthy type, discharge is rapidly reduced to a minimum, and the period of healing noticeably shortened. An added benefit is the local anesthetic action in preventing postoperative pain. The strength Bennett has found most generally serviceable is about 5 grains menthol per dram of methylated spirit. Sterilized white gauze ribbon is soaked in the solution, and, when the excess fluid has been pressed out, is immediately used as packing. The dressing need not be changed for three days.

Journal of Laryngology, Rhinology and Otology, London

February, XXXI, No. 2, pp. 33-72

12 Two Cases of Postoperative Intracranial Infection of Otitic Origin. H. L. Whale.
13 Vincent's Infection of Middle Ear and External Canal. J. Adam.
14 Lateral Sinus Thrombosis Followed by Tuberculous Abscess of Gluteal Region Simulating Pyemic Abscess. D. McKenzie.

Lancet, London

February 12, I, No. 4824, pp. 331-386

15 Effects of High Explosives on Central Nervous System. F. W. Mott.
16 Clinical Thermometry: Continuous and Quasi-Continuous Temperature Records in Man and Animals in Health and Disease. G. S. Woodhead and P. C. Varrier-Jones.
17 *Aerial Conveyance of Infection. F. H. Thomson.
18 Urea Content of Cerebrospinal Fluid. R. G. Canti.
19 Prophylactic Vaccination Against Hay-Fever. B. P. Sormani.
20 Case of Febris Colombensis. G. A. Lurie.
21 Case of Intracranial Hemorrhage Without Symptoms of Compression. P. W. Lam and E. Law.

17. **Aerial Conveyance of Infection.**—Thomson has come to the conclusion that scarlet fever infection is not conveyed by air. It has been held for many years that the infection of diphtheria is not air borne, and the evidence in the ward in which Thomson worked only makes it clearer that this opinion is correct. Thomson is disposed to regard the evidence as strong against the conveyance of rubella infection by air. A considerable number of the cases of rubella introduced into the ward during the winter of 1914 to 1915 came from two scarlet fever wards into which the infection had come from outside the hospital, and in these two wards the infection persisted for many weeks although new patients were not admitted. Such persistence of infection in this disease is uncommon, and therefore indicated unusual activity. Thomson inclines to the view that mumps is probably not air borne, and he is still in doubt as to whether whooping cough may be occasionally air borne or not. He is quite satisfied that chickenpox infection is air borne early in the disease, but it is difficult to determine the exact time it ceases to be so. It may uncommonly be conveyed by air on the third day, but apparently not afterward. With the intention of working this subject out systematically Thomson introduced cases of scarlet fever and chickenpox into a small boys' scarlet fever ward, but not to guard against contact infection in any way. The patients were young, and the ages of the unprotected exposed to the cases of chickenpox were from 1 to 8 years. In all, seven patients suffering from both diseases passed through the ward; 1 being introduced on the sixteenth day of the chickenpox; 1 on the twelfth day; 1 on the eleventh day; 1 on the tenth day; 2 on the ninth day and 1 on the eighth day. Only one patient was introduced at a time, and was kept in the ward until all the scabs had separated, or longer; while no patient was discharged until more than twenty-two days had elapsed after the first exposure, many being kept much longer. No infection arose from any of these cases. The ward in which this work was done accommodated twenty patients.

Quarterly Journal of Medicine, London

January, IX, No. 34, pp. 67-163

22 *Three Cases of Multiple Telangiectases with Epistaxis of Familial Type. R. Hutchison and W. J. Oliver.
23 Some Functional Nervous Affections Produced by War. F. E. Batten.
24 *Acute Hodgkin's Disease, with Involvement of Internal Glands and Relapsing Pyrexia. T. H. Whittington.
25 *Case of Pyelonephritis with Glucosuria. J. H. Ryffel.
26 *Paratyphoid; Study of Fatal Cases. B. Dawson and T. H. Whittington.
27 Nephritis in British Troops in Flanders. J. R. Bradford.
28 Protective Ferments of Body. R. L. M. Wallis.

22. **Multiple Telangiectases with Epistaxis.**—In this series of three cases two of the patients showed multiple telangiectases of the face with lesions on the buccal mucous membrane; all three gave a story of frequent attacks of epistaxis occurring since their early years, with a definite history of nose bleeding in other members of the family. The first patient was a male, aged 49. As long as he could remember he had had attacks of epistaxis, which had been more severe during the last two years, especially in the morning. The bleeding persisted even when he was in bed and often occurred after meals. Spontaneous bleeding from the lips, sometimes preceded by a feeling of soreness, began about eight years ago, but these had until his admission entirely ceased during the last two years. He had bled occasionally from the ears about the fossa of the helix and from the corner of the right eye, also from the gums and from the inside of the mouth, especially after very hot drinks. He had noticed some bleeding from the rectum on straining about one year ago. From the dilated superficial vessels on the nose occasional bleeding had spontaneously occurred during the last six years, and he was for this reason unable or afraid to wash in warm water. He had never observed any hematuria, hemoptysis, or hematemesis of fresh blood, but had frequently vomited swallowed clotted blood. The red spots and vessels had been first noticed about eight years ago and were increasing in number. He did not bleed particularly readily if he cut himself, and the bleeding from the dilated vessels on the lips and nose was quite easily stopped by the application of cold water. The bleeding was, as a

rule, rather more frequent during the summer months. He had no chilblains during the winter, but at this time the numbness and cramp in the toes which he always experienced each morning, and occasionally in the finger tips was more intense. The lesions inside the nose were cauterized without checking the epistaxis or causing much general improvement. Fifteen grains of calcium lactate was given twice daily for a period of three successive days with a similar result. Under a general anesthetic the lesions on the lips and later those inside the nose, were treated with diathermy. Great improvement followed.

The second patient, the father of the first patient. Since childhood he had had frequent spontaneous attacks of bleeding from the nose, with some bleeding from the gums during the last five or six months. Some two or three years ago there had been occasional bleeding from the rectum, with never any hematuria. He had had spots on the face for years and he was unable to say when these had first appeared. There had never occurred any spontaneous bleeding from these lesions and he was not accustomed to bleed at all markedly from any wounds of the skin. The third patient was also a male aged 25, the son of the first patient. For as long as he could remember he had been troubled with epistaxis, the attacks of which had not been so frequent during the last two years. There had been no bleeding from any other areas. No melena. No hematuria. The skin lesions in these three cases and those of the nasal and buccal mucous membranes are nevoid in character and of the nature of angiomata. There did not appear to be any underlying pathologic cause for the dilatation of the superficial blood vessels of these regions. Although the second case showed a somewhat high blood pressure no definite signs of an associated interstitial nephritis were recognized. The low blood pressure in the case of the first patient is attributed to the anemia present and the more aggravated form of his epistaxis and his numerous skin lesions to the presence of a mitral incompetence, though this condition appeared to be fully compensated during the period when he was under observation. In none of the cases could any history of the indigestion which usually accompanies acne rosacea be obtained, nor was there any sign of any local atrophy in the neighborhood of the skin lesions.

24. **Acute Hodgkin's Disease.**—The most noticeable features (considering the ultimate diagnosis) in Whittington's case and the ones which led observers astray were as follows: The acute onset with symptoms and signs suggestive of peritonitis; the subsequent remarkable resemblance of the case to typhoid; the general resemblance to an acute infective fever; the relapsing course in which there were not only relapses in pyrexia but also a curious periodicity of symptoms and signs; signs suggesting portal obstruction, and lastly (and very important) the entire absence of enlarged external glands. The diagnosis was not made until after the necropsy. The whole aspect of the case seems to support the view that Hodgkin's disease is due to some infective organism, which in this case was particularly virulent, and which had its chief habitat in the retroperitoneal glands and spleen.

25. **Case of Pyelonephritis with Glucosuria.**—With edema of a distribution not usually associated with renal disease, Ryffel's patient had dry skin, marked albuminuria, pus and casts in the urine, and lipemia. After an interval polyuria and renal glucosuria developed. No evidence was obtained of impairment of renal function except as regards the excretion of chlorid, and there was some response to diuretics. The amount of pus in the urine was such to justify the supposition that organisms were present in the urine. These were ultimately found and identified as *Streptococcus Pyogenes longus* in pure culture. The case was treated as one of infection of the kidneys, vaccines and later urotropin being employed. The combination was ultimately successful. As the blood pressure was low and the patient had been inactive for a long period, progressive muscular exercises were employed in the later stages with beneficial results.

26. **Paratyphoid.**—Abdominal pain and diarrhea occurred at onset in nine and eight cases, respectively of the seventeen studied by Dawson and Whittington; together with vomiting they were the features of three cases which had a sudden onset. Headache occurred in six, cough in three and epistaxis in two cases. The tongue resembled that found in typhoid. In thirteen cases spots were present, in some instances they were of larger size and less regular outline than those of true typhoid. In four out of the seventeen cases the respiratory manifestations were so definite as to be a presenting feature of the clinical picture. The pulse was soft and in six of the seventeen cases dicrotic. Displacement outward of the apex beat was not a marked feature, even when the heart was failing. Endocarditis was not once recorded. The blood pressure varied. The highest recorded systolic pressure in this series was 130. When the condition of the patient was grave $\frac{1}{100}$ grain strophanthin intravenously reduced the pulse from 168 to 145 in fourteen minutes, and later a second dose reduced it from 145 to 125. In eight cases the spleen was found enlarged postmortem; in six of these the enlargement had been detected during the life, and in two it had not. In one case the spleen was half the normal size. In two cases there were abscesses of the spleen. In one case of paratyphoid A infection the ulceration of Peyer's patches was very marked, while in another there were obvious signs of the healing of recent ulcers in the intestine when the patient died from a subsequent typhoid infection. In twelve out of the fourteen paratyphoid B infections the small intestine was affected to a varying extent. Usually the Peyer's patches were deeply ulcerated, and the solitary lymphoid nodules were raised and varied in size from pinheads to large peas. The lower two feet of the ileum were the constant seat of the disease, and the neighborhood of the ileocecal valve was the area the most intensely affected. The floor of the ulcers was constituted by the muscular coat or the peritoneum, and the edges of the ulcers were usually undermined and in all cases thickened. In two cases the small gut showed no lesions.

Judging from this series of cases the disease falls with more force on the large intestine in paratyphoid than in the typhoid. In ten instances of paratyphoid B infection the large intestine from the cecum to the pelvic colon was involved, the ulceration being most marked in the cecum and the colon so far as the splenic flexure. In the milder examples the lymphoid nodules were raised, hyperemic and umbilicated, whereas in the severer forms there were ulcers of varying sizes and depths. The appendix was a focus of mischief causing peritonitis in three cases. In two of these in which paratyphoid B was the cause, it was acutely inflamed. In one there was gangrene of the appendix, at the base of which there was a perforated ulcer. In another case the tip of the appendix was intensely inflamed, general peritonitis and portal pyemia had followed, and paratyphoid B was isolated from the pus both in the right iliac fossa and the liver. The appendix was the seat of the perforation of a typhoid ulcer in one case of paratyphoid A. The causes of death were as follows: perforation, 2 cases; peritonitis from infected appendix, 2 cases; hemorrhage, 2 cases; hemorrhage and toxemia, 3 cases; toxemia, 4 cases; pneumonia, 2 cases, and splenic abscess, 1 case. These represent a death rate of rather over 4 per cent. for paratyphoid B and under 1 per cent. for paratyphoid A.

Annales de Médecine, Paris

October, 1915, II, No. 5, pp. 443-562

29 *Typhoid in the Vaccinated. (Les infections typhoides chez les sujets vaccinés contre la fièvre typhoide.) L. Bernard and J. Paraf.

30 Concussion of the Spinal Cord by Projectiles. (Etude clinique et anatomo-pathologique de la commotion médullaire directe par projectiles de guerre.) H. Claude and J. Lhermitte.

31 *Reactions of the Organism to the Diphtheria Bacillus Revealed by Fixation of Complement Test. P. Lévy.

32 Clinical Anatomic Study of Compression of the Spinal Cord by a Tumor. G. Caussade, A. Barré and E. Joltrain.

December, No. 6, pp. 563-626

33 Nodose Erythema, Probably of Tuberculous Origin, in a Syphilitic. (Erytheme noueux et syphilis.) A. Chauffard and A. Le Conte.

34 Typhoid Fever and Diphtheria Associated; Fourteen Cases. M. Labbé and M. Juillan.

35 Intermittent Fever from Mild Meningococcemia Consecutive to Cerebrospinal Meningitis; Recovery. J. Baur, J. Sévestre and J. Hutinel.

36 *Complications on the Part of the Ear in Epidemic Cerebrospinal Meningitis. Roger and Baldenweck.
37 *Acute Fatal Suprarenal Syndrome in Course of Bacillary Dysentery; Four Cases. P. Remlinger and J. Dumas.
38 Regeneration of Spinal Nerve Fibers After Crushing Injury of the Spinal Cord. (Régénération de fibres nerveuses spinales dans un cas d'écrasement de la moelle.) G. Roussy and J. Lhermitte.

29. **Typhoid in the Vaccinated.**—Bernard and Paraf review their experience with 800 typhoid cases among soldiers. Cultures were made from the blood in 325 cases, with negative findings in 189. Typhoid bacilli were found in 32 who had not been vaccinated, and in 45 who had been vaccinated; paratyphoid bacilli in 26 nonvaccinated, and in 222 of the vaccinated. This material includes 26 men who had been thoroughly vaccinated against typhoid. The disease presented the usual clinical picture in them and in 5 was of a severe type, but none died; 2 developed suppuration in the skin during convalescence and the psychic condition called mental puerilism. On the whole, the exceptional mildness of the disease in the vaccinated was noticeable.

31. **Fixation of Complement by Serum of Diphtheria Bacilli Carriers.**—Lévy reports that there may be fixation of complement by the serum of persons from a diphtheria environment, but it occurs more constantly and decidedly in those children who have passed through typical or abortive diphtheria. These children had evidently been rendered immune by the presence and activity of a focus of the bacilli, their products causing the production of an ample supply of antibodies. The reaction was never positive early in diphtheria.

36. **The Ear in Epidemic Meningitis.**—Roger and Baldenweck report that they saw only 4 cases of otitis media in 50 men with epidemic meningitis but the internal ear was affected in 9 of the 35 survivors, that is, in 25 per cent. In 2 of this group only one ear was affected. In 3 the ear symptoms developed early; in 3 others during convalescence. The details of each case are tabulated under thirteen headings. The auditory nerve itself seems to have been injured in most. In 5 cases there was only partial deafness. The condition seemed to be stationary in all but 2 cases during the few weeks the men were under observation; in these the deafness improved in one and progressed in the other.

37. **Acute Suprarenal Syndrome in Dysentery.**—Among 100 men with bacillary dysentery, four suddenly developed cyanosis, abnormally low temperature, heart weakness and symptoms suggesting the last stage of cholera. The assumption of suprarenalitis was confirmed at necropsy by the swollen condition of the suprarenals and absence of any other appreciable cause for the above symptoms. The cases are described with minute detail. The syndrome was alike in all, resisting all measures including a systematic course of epinephrin.

Archives des Maladies du Cœur, etc., Paris

January, IX, No. 1, pp. 1-44

39 *Effect on the Heart Action of Pressure on the Eyeball: the Oculocardiac Reflex. (Réflexe oculo-cardiaque et extrasystoles.) G.-V. Ferralis and C. Pezzi (Pavia).
40 *Varying Findings with the Oscillometer on Different Arteries. (L'étendue comparée des oscillations fournies par l'appareil de Pachon sur les différentes artères des membres chez le sujet normal.) J. Heitz.
41 *Chronic Coffee Intoxication. (Le caféisme chronique.) M. Roch (Geneva).

39. **The Eyeball-Heart Reflex.**—Dagnini reported June 17, 1908, to the Bologna Medical Society that the main reflex phenomena from stimulation of the cornea and pressure on the eyeball differ materially on a sound and a paralyzed side. Pressure on the eyeball seems to stimulate the vagus nerve throughout more effectually, Ferralis and Pezzi declare, than pressure on the vagus in the neck. They have been utilizing this oculocardiac reflex to study the relations between this nerve and extrasystoles. They examined twenty persons, healthy or with some heart affection, comparing the electrocardiograms before, during and after pressure on the eyeball, and repeating the tests often enough to determine the exact type of the individual response. The findings demonstrate, they think, beyond question that this tenth or pneumogastric or vagus nerve is certainly involved, at least indirectly, in inducing or maintaining extrasystoles. This seems to open a new vista in therapeutics. Even if we are unable to seize the primary causal agent of the pathologic contraction of the heart, atropin to act on the vagus will certainly aid in correcting the condition. Its effect naturally will be merely symptomatic, but its use is justified by the phenomena observed in the tests described, independently of its influence in accelerating the rate of the heart. This acceleration alone may cut the extrasystoles. In any event, one should be wary in giving other drugs which may be useless or even do direct harm in certain conditions, although so useful when really called for. The extrasystoles elicited by pressure on the eyeball may occur isolated or in series. Until we can explain this phenomenon with greater precision we are at least justified in treatment based on the premise that the vagus is able to create in the myocardium a particular condition which favors the appearance of premature contractions.

40. **Oscillometry.**—Heitz has been studying on fifty persons the extent of the excursions of the oscillating needle when placed on different arteries throughout the body in turn. The aim was to learn the normal range, for comparing with it the behavior of the arteries in wounded limbs. An astonishing variation—sometimes amounting to as much as 50 per cent. —in the oscillometer findings was often found in symmetrical arteries in health and between the arteries in the arms and legs.

41. **Chronic Coffee Intoxication.**—Roch remarks that severe coffee poisoning is rare and mild coffee poisoning does little harm, but there is danger that we may overlook the severe form when we do encounter it. We label the case as one of dyspepsia with dizzy spells, nervousness and insomnia, neuralgia with palpitations, or some other vague title. By overlooking the real cause, there is little if any response to the measures we may apply in treatment. He cites figures to show that Holland consumes 9 kg. of coffee per capita annually, and Belgium, 6; the United States, 5; Germany, 3, and France, 2. The aspect in severe chronic coffee poisoning is unmistakable. The person is usually thin, prematurely wrinkled, the complexion yellow, with tremor of the hands, lips and tongue. The eyes are bright and quick; mydriasis is the rule; the demeanor is hesitating, brusque or uncertain, with involuntary movements and signs of impatience, exaggeration of the tendon reflexes and neuralgias. This picture is very seldom complete, but nervous and digestive symptoms are comparatively common, and functional cardiovascular disturbance is still more frequent and important. Roch has found the pulse small, hard and rapid, the arterial pressure high. Abuse of alcohol may induce digestive and nervous symptoms like those of chronic coffee poisoning but very rarely the pallor, thinness and neuralgias of the latter. The reflexes are reduced, not exaggerated as with coffee poisoning. The latter may resemble morphin or cocain addiction but the general condition is not so bad while the nervous and circulatory erethism is more pronounced.

The effects of chronic coffee poisoning may suggest gastric cancer, neurasthenia, or Basedow's disease, and it should always be borne in mind as a possibility in puzzling cases, especially among women of the working classes. Many keep the coffee pot on the stove all day and drink repeatedly from it. In treatment, besides giving up coffee, it is necessary to supply fluids to take its place, and he often orders for this purpose a mixture of 5 gm. each of tincture of cinchona, tincture of star anise and tincture of gentian. Fifteen drops of this are added to a tumbler of water at room temperature and sipped, repeating this four times a day. This wards off thirst and the longing for the customary coffee is less intense. Sudden abstention from coffee may bring on tremor, nightmares or severe headache. Tonics may be needed for the general health, bromid or valerian to soothe the nervous system, with other symptomatic measures as required.

In poisoning from abuse of tea, the clinical picture is about the same except that cardiovascular disturbances seem to be more common and more pronounced than with coffee. Huchard has reported cases of apparent angina pectoris from this cause; the nervous system is affected more. Wallace has seen two cases of amblyopia from tea poisoning, and Gordon has reported a case with ataxia, nystagmus, con-

traction of the field of vision and exaggerated reflexes in a woman who had been taking up to forty-five cups of tea a day. Treatment should be the same as for abuse of coffee. Roch adds that under the proper measures, the effects of coffee or tea poisoning are thrown off in a few weeks, and they can usually be allowed then in moderation.

Bulletin de l'Académie de Médecine, Paris

February 8, LXXV, No. 6, pp. 107-130

42 Minute Intravenous Doses of Colloidal (Basic) Quinin Effectual in Rebellious Malaria. F. Roux.
43 Improved Technic for Localization of Projectiles by Roentgen Rays. (Deux procédés simples pour localiser rapidement les projectiles par les rayons X.) A. Strohl.
44 *Goiter, Cretinism and Myxedema in the Vosges Mountain District. L. MacAuliffe.

44. **Goiter and Cretinism in the Vosges Mountains.**—MacAuliffe has been stationed with the army in the Vosges district for seventeen months, and at the request of the municipalities utilized his leisure in medical inspection of the schools. He found the thyroid notably enlarged in 288 of the 2,311 children examined, and 18 others had large goiters; 3 were cretins and 2 semicretins, while 4 presented myxedema. Ten others resembled cretins in their face but were intelligent. Goiters were found particularly numerous in nine different villages. The water supply was from rain and melting snow, with very little mineral content. The villages were clean and the people comfortably off. Consanguineous marriages were not frequent; meat, except pork, is almost unknown.

Archives de Médecine des Enfants, Paris

December, 1915, XVIII, No. 12, pp. 629-692

45 Universal Desquamative Scarlatiniform Erythema; Six Cases. (Erythrodermie desquamative généralisée.) Loewe.
46 Antityphoid Bacteriotherapy for Children; Forty-Five Cases, E. Ortiz, M. Acuña and L. Belloc (Buenos Aires). Commenced in No. 11.
47 Hereditary Malformation of Face and Skull. (Dysostose craniofaciale héréditaire.) J. Comby.

January, XIX, No. 1, pp. 1-56

48 *Serotherapy of Poliomyelitis; Thirty-Two Cases. A. Netter.
49 Causes and Treatment of Night Terrors in Children. T. A. Williams.
50 *Digestive Disturbances in the Tuberculous Child. L. Jeanneret.

February, No. 2, pp. 57-112

51 *Pneumonia Associated with Scarlet Fever. (La pneumo-scarlatine.) V. Hutinel.
52 *False Scarlet Fever of Toxic Origin. (Pseudo-scarlatines d'origine toxique.) M. Lasalle.
53 Primary Splenomegaly in Children. (La maladie de Gaucher.) J. Comby.

48. **Serotherapy of Poliomyelitis.**—Netter regards his results as promising: 6 rapid and complete cures; in 3 cases improvement approximating a complete cure; in 7 marked improvement, and in 5 appreciable improvement. In 3 no influence from the serotherapy was apparent, and 8 of the children died. The serum injected was obtained from persons who had recovered from the disease. The serum seems to keep its efficiency up to thirty years. The injection was made into the spinal canal, and repeated daily for a week. The doses ranged from 5 to 13 c.c.

50. **Digestive Disturbances in Tuberculous Children.**—Jeanneret remarks that the dyspepsia from overfeeding and overdrugging is common in private practice, but it is rare in hospital patients. Primary dyspepsia, on the other hand, is common in tuberculous children from the working classes. In fact, it is this which attracts attention and is the cause of the child's being brought to the hospital. The digestive disturbances may be mild or severe, even to the clinical picture of chronic enteritis. They are a great handicap to the child, and its debility increases every day. These digestive disturbances, however, are readily curable. Combe investigated the stools of numbers of children and found evidence that over 50 per cent. of the tuberculous children had no or very little hydrochloric acid. It is easy to supply this lack, and the children began to thrive almost at once as soon as they were given hydrochloric acid. Jeanneret now has a record of 120 tuberculous children tested for anachlorhydria; it was found in 25 per cent. in his private practice. The test is simple and the children do not object to it, swallowing readily the little bismuth capsule on a Congo red stained thread. The capsule shows in the Roentgen screen when it gets into the stomach. After waiting a moment the thread is pulled out. A change in tint shows the presence of hydrochloric acid. If the gastric secretion is found defective, he gives a teaspoonful after each meal of a mixture of 3 parts pepsin; 5 parts dilute hydrochloric acid; 50 parts syrup of raspberry, and water to 120 parts. The secondary enteritis soon subsides when the food is properly digested in the stomach. The underlying tuberculosis should be combated by modifying the soil—outdoor life, sunshine, tuberculin, etc., as indicated.

51. **Pneumonia Associated with Scarlet Fever.**—Hutinel refers in particular to pneumonia preceding the scarlatinal rash by a few days. He designates this type as pneumo-scarlatina, as both the pneumonia and the scarlatina are modified by the association. The pneumonia may appear during the eruption or in the peeling stage, particularly when there is nephritis. Each of these has a special type, as he describes in detail from his own and others' experience—a total of fifteen cases. The two diseases may have an aggravating influence on each other; the pleura is rendered more susceptible; infection is readily installed and is liable to prove very serious. There was a relapse of the scarlet fever in a third of the cases with pneumonia. The latter probably modified the reactions of the organism and impeded its efforts to immunize. An example of this modification of the reactions by an intercurrent disease is the veering to negative of a positive tuberculin skin reaction during an intercurrent measles. Typhoid, also, is materially modified by an intercurrent pneumococcus infection.

52. **False Scarlet Fever of Toxic Origin.**—Lasalle was surprised to find that the record of poisoning from copper sulphate, in France, between 1825 and 1905 was 183 cases, arsenic taking the lead with 738, phosphorus following with 347; then comes copper sulphate with 183, and verdigris with 76. Copper sulphate is used for spraying grape-vines in France, and two children who had been eating grapes thus sprayed developed symptoms deceptively simulating scarlet fever. The diagnosis of scarlet fever was made without hesitation but it had to be revised as the children were quite normal again by the fifth day. Vomiting, sore throat, headache and a lively rash over the entire body were the main symptoms.

Paris Médical

February 5, VI, No. 6, pp. 129-180

54 *Aids for Localization and Extraction of Projectiles. E. A. Weil; (Nouveaux instruments de guidage mécanique du chirurgien au cours de l'extraction des projectiles.) Béclère; (Localisation anatomique des projectiles de guerre.) F. Arcelin; (Sur l'extraction radio-chirurgicale des projectiles à l'aide du manudiascope, et accessoirement des appareils téléphoniques.) L. Bouchacourt; (Méthode radioscopique de localisation des projectiles par lecture directe et appareil de recherche chirurgicale.) R. Grandgérard; (Table des coefficients d'agrandissement des images radiographiques utilisable pour la localisation des projectiles dans les tissus.) M. de Laroquette and G. Lemaire; (Recherche radiologique des projectiles.) P. Lehmann; (Appareils et dispositifs nouveaux en radiologie.) de Keating-Hart.
55 The Nervous Strain of the War on Noncombatants. (L'angoisse de guerre et son traitement.) L. Rénon.

February 12, No. 7, pp. 181-196

56 *Diagnosis of Untreated Syphilis With Negative Wassermann for Three Months or More at First. (Réactions de Wassermann spontanément tardives.) H. Gougerot.
57 Autovaccine Therapy in Staphylococcus Septicemia. Etienne and Zuber.
58 Hernia of the Diaphragm. P. Legrain, J. Quéna and G. Richard.

54. **Localization and Extraction of Projectiles.**—This entire number of the *Paris Médical* is devoted to radiology, and is profusely illustrated, showing numbers of devices that will aid in the removal of a metal foreign body.

56. **Tardy Wassermann Reaction in the Untreated.**—Gougerot has had three patients who presented a dubious lesion suspicious of syphilis, but as the Wassermann was constantly negative on repeated tests the men insisted on giving the lesion the benefit of the doubt and refused treatment. After one hundred days, forty-five days and four months, mild secondary lesions developed and the Wasser-

mann became positive. This was at the eighth repetition of the test in one case. In all three the manifestations of the syphilis were extremely mild, notwithstanding the lack of treatment, and all promptly subsided under mercury or salvarsan. In a number of other cases given prompt treatment the Wassermann was persistently negative. We must fully realize that the case cannot be dismissed as something other than syphilis when we obtain a persistently negative response to the Wassermann even long past the traditional thirty days from the initial lesion. It is better, he continues, to suspend judgment for a whole year, and even then the Wassermann should be repeated the twenty-fourth, thirty-sixth and forty-eighth months. These are the decisive tests. Until this is done we can never be certain that a suspicious lesion developing under suspicious circumstances may not have been syphilis. Clinical examination and the ultramicroscope may clear up the diagnosis before this, but otherwise a patient menaced with syphilis must be kept under prolonged, repeated clinical and serologic surveillance or dire harm to himself and others may result.

Revue Médicale de la Suisse Romande, Geneva

January, XXXVI, No. 1, pp. 5-64

59 *Extra-Uterine Pregnancy: Eight Cases. P. Wanner.
60 Omentum Grafts. (Des greffes épiploiques.) G. Patry.
61 *Diagnosis of Torsion of the Greater Omentum. Veyrassat.

59. **Extra-Uterine Pregnancy.**—Among the seven cases described in detail was one in which the supposed extra-uterine pregnancy proved at the operation to be an ovarian cyst coexisting with a normal two-months' pregnancy. The uterus was not disturbed as the cystic ovary was removed, and the pregnancy continued to normal delivery at term. In another case the extra-uterine pregnancy was recognized as the tube ruptured, but under sedatives and repose the relics of the hemorrhage and pregnancy were evidently absorbed as the attending physician had hoped would be the case. During the following ten years the previously healthy patient was a semi-invalid, with pains in the back, stomach and abdomen, and finally difficulty in urination. Wanner then saw the patient for the first time and found when the abdomen was opened that the omentum was solidly adherent to the uterus, and that adhesions fastened the latter to the pelvic wall. All pain and disturbances ceased after resection of the omentum and of the adhesions. In one of his cases presenting symptoms of ruptured tubal pregnancy, puncture of the pouch of Douglas released a turbid fluid free from blood. This misled him to assume a tuberculous process, but uterine hemorrhage compelled intervention later and recovery followed excision of the ruptured tube. Another case emphasizes the necessity for extreme caution in palpating the abdomen when there is incipient and intact tubal pregnancy. There may be no symptoms except those of a commencing normal pregnancy. In the case reported the physician assumed that the uterus was displaced and supposedly straightened it. Hemorrhage followed and the pains in the left side continued, with occasional syncopes and finally nausea. The correct diagnosis was not made until the pregnancy was of three and a half months' standing, when fetal membranes were passed and the fetus was found in the pouch of Douglas.

61. **Torsion of the Omentum.**—Veyrassat reports three cases in which he diagnosed torsion of the greater omentum in men between 30 and 55, and successfully operated. The most characteristic sign was the localization of the pain along the greater curvature of the stomach, in the region where the omentum is attached above. The worst pain was to the left of the umbilicus, where the outer edge of the omentum is attached. Two of his patients declared the pain was located along a transverse line at about the level of the umbilicus, the maximum always on the left side. The pain was compared to cramps, colics or traction, one of the men saying he felt as if his stomach were being dragged down. The first sign of trouble was a sharp pain in the hernia and inguinal region, spreading in the abdomen, with the usual symptoms of subacute peritonitis. Palpation revealed a retroparietal mass in the right inguinal fossa, continuous with the hernia, although of varying diameter. If the hernia and torsion had been on the left side, the traction and the consequent pain would have been most severe at the extreme right of the transverse line of pain. The omentum may become twisted along with torsion of an abdominal tumor, without hernia, or the torsion may occur insidiously; in these cases the correct diagnosis is almost impossible before operating.

Berliner klinische Wochenschrift

January 17, LIII, No. 3, pp. 53-76

62 Treatment of Eczema. (Entzündliche Exsudation und Jucken. A. Bläschenekzem. Beseitigung der Exsudation.) P. G. Unna.
63 *Artificial Esophagus. (Zur totalen Oesophagoplastik.) G. Axhausen.
64 Application of Hard, Filtered Roentgen Rays in Treatment of Skin Diseases. (Anwendung harter filtrierter Röntgenstrahlen in der Dermatotherapie.) H. E. Schmidt.
65 The War Literature in the Field of Internal Medicine. (Die Kriegsliteratur aus dem Gebiet der inneren Medizin.) P. Reckzeh. Concluded in No. 6.

January 24, No. 4, pp. 77-100

66 Treatment of Eczema. (Entzündliche Exsudation und Jucken. A. Bläschenekzem. Beseitigung des Hörndruckes.) P. G. Unna.
67 Welfare Work for Blinded Soldiers. (Ueber Kriegsblinde und Kriegsblinden-Fürsorge.) W. Uhthoff; (Der Blinde als Berater des Blinden und in der Blindenfürsorge.) L. Cohn.
68 *Intravenous Injections of Lactose Without Reaction: Schlayer's Kidney Test. (Ueber reaktionslos verlaufende intravenöse Milchzuckerinjektionen.) W. Wechselmann.
69 High Arching Palate and Adenoids. (Gaumenhochstand und adenoide Vegetationen.) W. Lublinski.

January 31, No. 5, pp. 101-128

70 Surgical Treatment of Wounds of Trunk Blood Vessels; 247 Cases. (Meine Erfahrungen in der Kriegschirurgie der grossen Blutgefässstämme.) H. Küttner. To be concluded in No. 6.
71 Advantages of Whole Grain Bread. (Zur Frage nach dem Nährwert des Vollkornbrotes.) F. Röhmann.
72 *Rachitis. E. Schloss.
73 Stone in the Pancreas: Two Cases. (Zur Klinik der Pankreassteinkolik.) M. Einhorn (New York).
74 *Blunders in Treatment of the Eyes. (Ophthalmologische Fehlgriffe im Felde.) R. Rauch.
75 *Iodoform in Gum Acacia Solution for Local Treatment of Hemorrhagic Stools. (Ein Mittel zur Bekämpfung der blutigen Stühle.) Moszkowski.

63. **New Esophagus Made from Loop of Duodenum.**—Axhausen gives an illustrated description of the various procedures he applied in the case of a young man with occlusion of the lower esophagus from a caustic swallowed by mistake. The technic was that of Roux and Lexer, a loop of duodenum and a tube made from skin supplying the material for the new esophagus. It seems to be functioning well; fluids and food pass directly and promptly into the stomach under the influence of gravity and the swallowing mechanism of the pharynx. This gratifying result was realized in six months with five separate surgical procedures in turn.

68. **Intravenous Injection of Lactose as Test of Kidney Functioning.**—Wechselmann has applied this test in the last two and a half years in many thousands of cases, and since he has been using an absolutely pure article he has had no mishaps or by-effects with it. His experience has confirmed its value as an index of the functioning of the glomerular apparatus. The elimination of salvarsan depends to such an extent on the integrity of this apparatus that tests of its functional capacity are of fundamental importance before giving salvarsan. The value of the lactose test has been universally recognized, he remarks; adding that recent research by Schwarz and Pulay on it has opened new prospects for it. The by-effects which have deterred a number from continuing to use it have been traced to contamination of the lactose with molds.

72. **Rachitis.**—Schloss has made a special study of the skulls of infants at an orphan asylum at Berlin, in addition to the infants of his private practice. From the findings in this large material, compared with those reported by others, it seems evident that the skeleton of from 20 to 80 per cent. of the infants examined was incomplete at the time of birth. This hypoplastic condition of the skeleton is especially noticeable in the delay or retrogression of the ossification of the skull. It is chemically evident further by a local or diffuse lack of adequate bone-forming salts. The ultimate cause of this unfinished condition of the skeleton is still a problem. It is not rachitis, but it provides an exceptionally good soil for rachitis, and may even be regarded as affording a pre-

disposition for it. But rachitis may develop when there is little or none of this predisposition.

74. **Blunders in Treating Eye Affections.**—Rauch comments on the ill advised measures he has seen applied to soldiers by medical men not trained in ophthalmology, and warns against them. He specifies in particular the harm liable to follow the mistaken practice of bandaging the eye when there is much discharge or pus. It should be allowed free escape, and Nature has provided a sufficient protecting mechanism so that even a protecting cover is not required for such affections as follicular or eczematous conjunctivitis, a suppurating lacrimal sac, trachoma, or blepharospasm. On the other hand, a protecting dressing is indispensable when there is a foreign body in the cornea or it has just been removed, or there is gonorrheal trouble in one eye and it is important to protect the sound eye against its secretions. When it is necessary to bandage one eye, he bandages both as a rule. He warns further that cocain irritates the sympathetic and may mask the presence of a foreign body. When therapeutic mydriasis is required, he prefers atropin or scopolamin to cocain. Exenteration is simpler in an emergency than enucleation, and he has done it in sixteen cases with satisfactory outcome in all. A narrow strip of gauze was introduced into the sclerotic cavity after curetting and enucleation, and a compress was applied to ward off inflammatory protrusion of the stump renewed two days later. The field surgeon can feel that he has done his full duty by those with wounds involving the eyes if he sees to their being rushed back from the front at the earliest possible moment. Get them started on the way for specialist treatment before it is too late.

75. **Emulsion of Iodoform in Treatment of Bloody Stools.**—Moszkowski has been applying with great success a method of treatment which has long done valuable service in amebic dysentery in the Dutch East Indies in the hands of de Haan and K. de Jonge. An emulsion of 80 gm. iodoform with 100 gm. gum acacia in 180 c.c. distilled water is given by rectal injection. A soft tube is introduced into the intestine for 50 cm. Then 45 or 55 c.c. of the emulsion are forced into the tube with a syringe. His thirteen patients bore the injection well and retained the fluid for two or three hours. One of these enemas answered in one case; in 3 two were required; in 2, three; in 3, four; in 3, five and in one very severe case nine of the injections were given. They not only arrested the tendency to hemorrhage but cured the diarrhea, and the tenesmus subsided almost invariably after a single injection. No dysentery bacilli were found in his cases but paratyphoid bacilli in one. The spleen was enlarged in three. Benefit was apparent in every instance, so that Moszkowski advocates giving these injections daily in all cases of bloody diarrhea regardless of whether dysentery, typhoid or other causes are responsible for the disturbances.

Correspondenz-Blatt für Schweizer Aerzte, Basel

January 29, XLVI, No. 5, pp. 129-160

76 Connection Between Ovulation and Menstruation. (Neuere Anschauungen über das Wesen und den Zusammenhang von Menstruation und Ovulation.) P. Hüssy.

77 Pathologic-Anatomic Diagnosis of Endometritis. S. Schönberg.

February 5, No. 6, pp. 161-192

78 *Organic Basis for Epilepsy and Two Successful Operative Cases of Brain Tumor. (Zwei Fälle glücklich operierter grosser Hirntumoren nebst Beiträgen zur Beurteilung organisch bedingter Epilepsie.) T. Kocher. Concluded in No. 7.

79 *Metastatic Prostatitis. H. Wildbolz.

80 Pellagra in Switzerland. B. Galli-Valerio.

78. **Brain Tumor and Epilepsy.**—Kocher declares that it cannot be reiterated too often that we should not wait for an exact local diagnosis when there is suspicion of an intracranial tumor. A decompressive operation in time may not only ward off blindness but may also relieve the subjective disturbances and prevent the peril from sudden increase in pressure on the centers of the medulla oblongata. In one of the two cases described in detail, attacks of jacksonian epilepsy gradually developed and by the end of the fourth year became transformed into "genuine" epilepsy; two years later headache and dizziness were superposed on the tendency to epilepsy but there was no sign of choked disk. This was the more remarkable as the subcortical central tumor in the left cerebrum had grown to the size of a hen's egg when removed at the tenth year. This absence of choked disk confirms Frazier's assertion that the increased tension of the cerebrospinal fluid is alone responsible for the pressure on the brain entailing choked disk. Kocher reiterates that there is no essential difference between "genuine" and jacksonian epilepsy; increased intracranial pressure is a factor in both, and he preaches that operative treatment is required for each. The pressure may be localized at some one point, and the operation will relieve this even if the actual focus is not discovered.

79. **Metastatic Prostatitis.**—Wildbolz remarks that because gonorrhea is responsible for prostatitis in the majority of cases, we must not assume that this is always the case. Germs of all kinds may reach the prostate through the blood or lymph from some remote focus. The urine is apparently normal in this case, and the symptoms from the prostatitis may be misinterpreted. He believes that this occurs surprisingly often. The prostate offers peculiarly favorable conditions for colonization of germs. Weigert found metastatic suppuration in the prostate in 7 of 17 cases of pyemia, and it is usually involved in miliary tuberculosis. In the last ten years Wildbolz has encountered 14 cases in which acute prostatitis had developed consecutive to epidemic influenza. In the majority of 22 other cases, tonsillitis or bowel trouble had preceded the prostatitis. The inflammation did not progress to actual suppuration except in 5 cases. Influenza bacilli were not found in the secretion from the prostate in any instance—merely ordinary pus germs—but these bacilli seldom get into the blood in large numbers. One of his patients had several styes precede the prostatitis; the connection with the latter was sustained by staphylococcus osteomyelitis developing during the course of the prostatitis. Another patient had a furuncle on the neck and a consecutive prostatitis and perinephritic abscess, with staphylococci in all.

The symptoms of metastatic prostatitis are pressure and pain in the perineum and rectum with frequent and repeated desire to urinate and scanty output of urine as a rule, but one patient had a metastatic abscess in the prostate which had to be opened through the perineum, and yet there had been no symptoms on the part of the urinary apparatus at any time. In some cases sudden retention of urine is the first symptom from the prostatitis. The latter is frequently accompanied by terminal hematuria, less often with the suppurating than with the nonsuppurating form. There is always considerable general disturbance with this metastatic prostatitis, with or without fever. Pressure on the prostate may be extremely painful; even introducing the finger into the rectum causes pain. The prostate is generally enlarged, soft and elastic, and the seminal vesicles may be enlarged from obstruction to their outlet by the enlarged prostate. In one of his cases epididymitis followed the metastatic prostatitis. The normal condition of the urine with the above symptoms reveals the metastatic nature of the trouble. The onset of symptoms is stormier than with simple hypertrophy or a tumor. The symptoms may be misinterpreted as indicating a tuberculous process somewhere in the urinary apparatus, or gonorrhea. The prostate may become extremely congested, without inflammation, and cause some of the above symptoms. Anything entailing congestion in the region is liable to induce this, especially chronic constipation, a sedentary occupation, sexual excesses and, above all, coitus interruptus. With simple congestion the symptoms come on more gradually, the urine persists normal, and the disturbances may keep up indefinitely, while treatment on the mistaken diagnosis of general nervousness, etc., gives no relief. Treatment of metastatic prostatitis should be on the same lines as for prostatitis from any cause. The prognosis seems to be on the whole favorable.

Deutsche medizinische Wochenschrift, Berlin

January 27, XLII, No. 4, pp. 93-120

81 Treatment of Spasms in Children. I. (Behandlung der Krämpfe im Kindesalter.) L. Tobler.

82 *Experimental Bases for Treatment of Pulmonary Tuberculosis with Roentgen Exposures. L. Küpferle and A. Bacmeister.

83 Combined Radiotherapy in Pulmonary Tuberculosis. (Die Erfolge der kombinierten Quarzlicht-Röntgentiefentherapie bei der menschlichen Lungentuberkulose.) A. Bacmeister.
84 *Disappointing Results With Endobronchial Spray in Treatment of Asthma; Ten Cases. Stephan.
85 Bullet in Larynx Wall. M. Lubinski.
86 Lessons From the War in the Domain of Internal Medicine. (Ergebnisse der bisherigen Kriegserfahrungen auf dem Gebiete der inneren Medizin.) P. Reckzeh. Commenced in preceding volume.
87 War Experiences With Wounds of Nerves and Nervous Affections. (Ergebnisse der bisherigen Kriegserfahrungen auf dem Gebiete des Nervensystems.) E. Tobias. To be concluded in No. 5.
88 Action of Bullets in Organs Containing Fluid. (Zur hydrodynamischen Geschosswirkung.) M. Reuter.

82. **Roentgen Treatment of Pulmonary Tuberculosis.**—Küpferle and Bacmeister reported in 1913 a series of experiments on rabbits inoculated with tuberculosis and systematically exposed to the Roentgen rays. The outcome was decidedly encouraging in many of the animals, and inadequate dosage explained most of the failures. In a later series they used large doses at shorter intervals, and report remarkable success; the tuberculous process was evidently arrested and healed over but the tubercle bacilli themselves were not killed. No influence from the mercury vapor lamp or cholin could be detected. The dosage found effectual for the rabbits was 20 or 23 X surface energy, given at three or five day intervals. The research was done under a subsidy from the Koch foundation, and the results are regarded as so promising that roentgenotherapy with hard, filtered rays is now being used in the clinic, and Bacmeister here reports twenty cases of stationary pulmonary tuberculosis, without fever, and with a tendency to latency, in which the treatment was applied, as also in a number of febrile and chronically progressive cases. The course has been completed by ten patients in this latter group, and they are all clinically cured. In every case benefit was manifest; three of these patients had been in his sanatorium (St. Blasien) for fourteen, eight and five months but the tuberculosis had not mitigated its progressive character until the Roentgen treatment was applied. Remarkable benefit is apparent in a number of the twenty-three others in this group still under treatment. The experimental and clinical data all confirm that the Roentgen rays act only on the relatively rapidly growing tuberculous granulation tissue. Extremely virulent and rapidly destructive processes are not influenced by them, nor cheesy processes nor the tubercle bacilli themselves. The principles for application and the technic are the same as for superficial tuberculous processes. Success depends on proper dosage and intervals, supplemented by outdoor life with graduated exercise and repose. In conclusion he reiterates that the Roentgen treatment is particularly promising, in combination with the mercury lamp treatment, for a lung compressed by induced pneumothorax and after thoracic surgery.

84. **Endobronchial Spray for Asthma.**—Stephan writes from Killian's clinic to report that the experiences there with a novocain-epinephrin solution sprayed into a bronchus through the bronchoscope have not been as encouraging as those published by others. One patient had no further attacks for nine months, but then they returned; six others escaped further attacks for a period of two to twelve weeks. One patient did not improve at all. The spray was applied from one to ten times at weekly intervals.

Medizinische Klinik, Berlin

January 30, XII, No. 5, pp. 113-138

89 Advantage of Transforming a Closed Into an Open Pneumothorax. (Zur Frage der Thorakotomie.) F. Krause.
90 Retention Catheter in Treatment of Wounds Involving the Urethra. (Harnröhrenwunden und Verweilkatheter.) A. Rothschild.
91 Successful Removal of Large Brain Tumor. J. Csiky.
92 Clinical Cure Under Induced Pneumothorax in Case of Advanced Left Pulmonary Tuberculosis. (Kasuistischer und technischer Beitrag zum "künstlichen" Pneumothorax.) C. Martin.

Münchener medizinische Wochenschrift, Munich

January 25, LXIII, No. 4, pp. 113-148

93 Lateral Transposition of Abdominal Viscera Found in Apparently Healthy Mother of Healthy Child. (Situs viscerum inversus abdominalis mit Eventration des rechtsgelagerten Magens und Stauungsektasie der Speiseröhre.) W. Fleiner.
94 *Indican in the Blood With and Without Kidney Disease. (Ueber Indikanämie und Hyperindikanämie bei Nierenkranken und Nierengesunden.) M. Rosenberg.
95 Official Directions for Prophylaxis of Scarlet Fever. (Die amtsärztliche Bekämpfung übertragbarer Krankheiten. II.) M. Henkel.
96 *Mercury Exanthem Ascribed to Salvarsan and Vice Versa. (Verwechslung von Quecksilber- und Salvarsan-Exanthemen.) A. Neisser.
97 Chilling as Preliminary Aid to Radiotherapy. (Kälte- und Uviolbehandlung in Verbindung mit Röntgen und Radium.) H. Axmann.
98 Consent Not Required for Operations on Soldiers During the War. (Soldat und Operation im Kriege.) P. Kaestner.
99 Gas Gangrene. (Zur Aetiologie und Pathogenese des Gasbrands. I.) H. Conradi and R. Bieling. Concluded in No. 5.
100 Technic for Localization of Foreign Bodies. (Feldmässige Improvisation röntgenologischer Hilfsgeräte und deren Verwendung zur Fremdkörperlokalisation und Orthoröntgenographie.) R. Grashey.
101 Wounds of the Skull. (Zur Frage der Schädelschüsse.) A. Kirchenberger.
102 First Treatment of Wounds of the Eyes. (Merkblätter für Feldunterärzte. VIII.) E. Rotter.
103 Repeated Inhalation of Oxygen Tides Past the Danger Point in Collapse From Loss of Blood. (Zur Bekämpfung von Kollapsen bei Ausgebluteten.) C. Nowakowski.
104 Intracardiac Injection of Heart Tonics. (Die intrakardiale Injektion.) Ruediger.
105 Gas Phlegmons; Recovery in One of the Two Cases After Incisions Down to the Bone. Marquardt.
106 Static and Mechanical Principles Involved in Making Artificial Limbs. (Statische und mechanische Verhältnisse bei Beinprothesen.) Stoll.
107 Splints for the Wounded. (Eine Schiene für den Kriegsgebrauch.) P. Mohring.
108 Improved Method for Keeping Records on Hospital Trains. (Ueber eine sichere und einfache Art, das Beladen von Lazarettzügen zu regeln und zu überwachen.) P. Stielow.

94. **Hyperindicanemia in Relation to the Kidneys.**—Rosenberg has been studying to determine the extreme limit of normal indicanemia, and tabulates the figures found in forty healthy persons or patients with apparently sound kidneys, in thirty-two with kidney disease but no uremia, and in twenty-nine with urea in the blood up to 1.5:1,000. Jolles' test is too delicate to be dependable, but the Obermeyer-Tschertkoff test begins to give a positive response just about at the limit where the high indican content of the blood corresponds to actual insufficiency on the part of the kidneys.

96. **Mercury or Salvarsan Exanthem?**—Neisser distinguishes between the "arsenic exanthem" and the exanthem due to a special idiosyncrasy, mostly of the urticaria type. The idiosyncrasy may be local from some preceding injury of the skin. This idiosyncrasy type is liable to develop anew each time salvarsan is given, but the tendency to the "arsenic exanthem" dies out with time. In two patients recently the acquired idiosyncrasy could be demonstrated at will by local application of a drop of the arsenic preparation, while mercury had no effect in this line. Some of his patients showing these two types of salvarsan exanthem had never been given mercurial treatment or not for many years. In conclusion Neisser reaffirms his loyalty to the combined mercury-salvarsan treatment of syphilis, declaring that he has never seen anything to indicate harm from this combined technic while he is convinced that the results are much more certain with it.

Wiener klinische Wochenschrift, Vienna

January 27, XXIX, No. 4, pp. 89-120

109 *Bronchospasm. N. v. Jagic.
110 Vaccination Against Dysentery. II. (Ueber Ruhrschutzimpfung. II.) K. Hever and F. Lucksch.
111 *Experimental Chemotherapy of Cancer. (Kritische Studien zur experimentellen Therapie maligner Neoplasmen. III.) S. Fränkel and E. Fürer.
112 Welfare Work and Training for War Invalids. (Ueber die Schulung Kriegsinvalider.) O. Burkard.
113 *Typhus. (Ueber Flecktyphus. II.) E. Wiener.

109. **Bronchospasm.**—Von Jagic reviews a number of recently acquired data which have thrown light on spasmodic contracture of the bronchi and the influence on it of epinephrin. The latter stimulates the sympathetic while depressing the tonus of the vagus; one of the main factors in the effect is the exaggeration of the excursions of the diaphragm, and this relieves the bronchospasm. After having become convinced of the harmlessness of subcutaneous injections of

epinephrin, even for the elderly, he has been using epinephrin in dyspnea from other causes, and especially with emphysema. His experience emphasizes the importance of the diaphragm's ampler excursions under the influence of epinephrin. Strasburger has recently called attention to the reduction of mucus production in the bowel under the influence of epinephrin, and this may occur likewise in the bronchi. Von Jagic has a number of asthma patients who return to get their epinephrin injection whenever an acute attack of asthma befalls them. Half an hour after the injection they return to their work as usual, and have no return of the attacks for a long time. The effect of the subcutaneous injection is prompt. When the attacks are mild or keep up a long time he gives epinephrin in suppositories.

With secondary emphysema the epinephrin relieves, but the heart may have to be kept up with digitalis, the former acting merely on the bronchospasm and diaphragm. With primary emphysema he has been impressed with the very small range of the excursions of the diaphragm, and when this was corrected by epinephrin the relief was so great that it demonstrated the importance of this and of bronchospasm in emphysema, whatever its origin. An interesting sidelight is thrown on emphysema by the positive aldehyd reaction in the urine when there is much dyspnea with emphysema, and its veering to negative after the injection of epinephrin. The same effect was realized with it in treatment of spastic bronchitis free from all signs of tuberculosis. These patients were young soldiers with bronchitis and dyspnea, increased by physical exertion, but little or no expectoration. The tendency to bronchial catarrh and dyspnea had been noted for years and palpitations often followed unusual exertion. Nothing pathologic could be detected in the heart, and in all the cases examined the excursions of the diaphragm were remarkably small and were invariably increased by epinephrin. A tendency to exaggerated tonus of the bronchial musculature may long persist alone or may lead to a secondary bronchitis.

111. **Experimental Chemotherapy of Cancer.**—Fränkel and Fürer remark that the tendency to a spontaneous cure is the most disturbing element in estimating the effect of different drugs on experimental cancer. All the drugs which have shown any action on experimental cancer have the one feature in common that they injure the vessels of the tumor, rendering them fragile so that they rupture. The tumor cells are not specifically affected, merely the vessel walls. Bearing these facts in mind, they have been conducting research with various chemicals as they will describe later. Here they present the results of their work with cholin—all practically negative.

113. **Typhus.**—Wiener concludes these impressions of his experience with typhus by emphasizing the benefit from treatment directed mainly to sustain the heart. For this he used early and repeated injections of caffein, giving sometimes five or six a day, icebag to the heart and injection of ergot or epinephrin if there was much hemorrhage. During convalescence very warm baths every day displayed a decidedly favorable influence. The most characteristic symptom of typhus is the extreme fragility of the vessel walls. This may entail thrombotic infiltration in the calves or elsewhere, recurring epistaxis or hemorrhage in the kidneys.

Gazzetta degli Ospedali e delle Cliniche, Milan

February 3, XXXVII, No. 10, pp. 145-160

114 Progressive Atrophy of Muscles; Four Cases in Two Generations in One Family. (Atrofia muscolare progressiva familiare.) S. Niero.

Policlinico, Rome

February 6, XXIII, No. 6, pp. 165-196

115 *Larynx Affections in Camp. (Flogosi laringee piu comuni nella vita castrense.) G. Ferreri.

116 Frost-Bite. (Il piede da trincea.) G. Dragotti; (Sulla clinica e la cura delle congelazioni.) T. Cecchetelli.

115. **Laryngeal Affections in Soldiers.**—Ferreri remarks that the number of cases of adenoids found among the soldiers is a surprise, and also that in large numbers of the younger men, the tonsils show no tendency to the physiologic retrogression. During the severer winter weather, disturbances from this cause were frequent, especially in those not accustomed to mouth breathing. He warns that the condition of the nasopharynx and larynx should be investigated more systematically in examining men for military service, existing anomalies corrected, and inflammatory processes cured. He commends what he calls local medicated baths of the hypopharynx as more effectual than gargling. A swallow of the disinfectant solution is taken into the mouth and the head is bent over backward until it almost touches the spine. This bathes the hypopharynx in the fluid, and with a little practice one can breathe at the same time. Men liable to throat trouble should be advised to be moderate in the use of alcohol and tobacco, avoid too hot and too cold drinks, refrain from singing or shouting in marching on a dusty road, and use individual spoon and fork and rinse out the mouth often with the "anisated water" supplied to all the soldiers. Those already showing lesions should spray or gargle besides. Irritating gases and dust, sudden changes of temperature and chilling are liable to induce a diffuse hyperemia in the laryngeal mucosa. This congestion may lead to rupture of some minute vessel under the exertion of coughing, and open the portals to infection or cause hemorrhage. Hence it is advisable to dispel the congestion by revulsion to the front of the neck, rest of the parts, some astringent spray, and a few powders of sodium benzoate (0.20 gm.) and codein (0.01 gm.).

Edema of the larynx that does not yield to an astringent spray may require tracheotomy; intubation is almost impossible and dangerous in this condition. Syphilitic and tuberculous lesions in the larynx may be favorably modified by inhalation of the fumes from a mixture of 5 parts each of balsam of Peru, menthol and turpentine, with 30 parts tincture of eucalyptus (a tablespoonful in a cup of hot water). He regards as too low Mackenzie's estimate of a syphilitic origin in 5 per cent. of all cases of chronic laryngeal trouble, saying that among the troops the proportion averages much higher. The lesion is exposed to particularly unfavorable conditions in soldiers on active service, while the danger of infecting others by means of common drinking cups, etc., is imminent. Under irritating influences the lesion may ulcerate and simulate a tuberculous process, but the latter is rendered improbable by the rapid course and enlarged glands. Syphilitic processes locate preferably on the back of the larynx, and are more of a coppery red. Mercurial inunctions are seldom practicable for soldiers on active service, and the use of neosalvarsan with calomel is preferable. In local treatment he advocates painting the lesion with a 1 per cent. mixture of mercuric acid nitrate in glycerin. Men with tertiary manifestations should be sent to the hospital.

Mitteilungen a. d. med. Fakultät der k. Univ., Tokyo

XIV, No. 3, German Ed., pp. 417-564. Last indexed Oct. 30, 1915, p. 1593

117 Size of Electrode as Influencing the Excitability of the Nerves. (Einflüsse der Elektrodenbreite auf die Erregbarkeit der Nerven.) T. Inouye.

118 Acetic-Sulphuric Acid Test for Skatol. (Neue Skatolreaktion.) Z. Hatta.

119 *Silver Chlorid Centrifuge Test for Chlorids in Urine. (Ueber die approximative Chlorbestimmung des Harnes mittels Zentrifuge.) Y. Sueyoshi.

120 *Phosphotungstate Test for Albumin in the Urine. (Neue approximative Eiweissbestimmungsmethode bei der Albuminurie.) Y. Sueyoshi.

121 Digestibility of Raw and Cooked Fish. (Einige Versuche über die Verdaulichkeit des rohen und gekochten Fischfleisches.) Y. Takasaki.

122 *Research on the Vocal Organs of Castrated Fowls. (Zum Studium des Stimmorgans beim Kapaun.) Y. Hosoya.

123 Narcotic Element Isolated from Japanese Shrub of Tea Family. (Ueber einen narkotisch wirkenden Bestandteil der Actinidia polygama Miq.—Matatabi.) S. Shimizu.

124 *The Diastatic Action of Human Saliva. (Diastatische Wirkung des menschlichen Speichels.) Z. Hatta.

125 Varicose Enlargement of Connected Splenic, Renal and Collateral Veins. (Ungewöhnlich grosser Varix anastomoticus lieno-gastro-epiploico-renalis bei Morbus Banti (?). Tödliche Magenblutung.) J. Nakamura.

119. **Centrifuge Estimation of Chlorids in Urine.**—Sueyoshi precipitates the chlorin ion with silver nitrate and nitric acid.

The amount of silver chlorid recovered from the sediment is an approximate index to the chlorid content of the urine. Other things being equal, the proportion between the total amount of sediment and the chlorid content is a constant figure. Comparative tests with this and other methods of estimation showed differences ranging from zero to merely 9 per cent.

120. **Test for Albumin in Urine.**—Sueyoshi here describes an improved technic for Tsuchiya's phosphotungstic-hydrochloric acid-alcohol reagent for detecting albumin in the urine. He tabulates the findings with various tests applied to the urine. The difference from the Kjeldahl findings was never over 13 per cent. while it was 31 per cent. with Tsuchiya's original technic. The reagent is a mixture of 20 gm. mercuric chlorid; 5 gm. potassium bromid; 10 c.c. hydrochloric acid (30 per cent.); water 55 c.c. and alcohol (95 per cent.) to 100 c.c. The test tube is filled about half full of urine and about seven-eighths as much of the reagent is poured in and thoroughly mixed with it. The albumin sediment is measured next day as usual. The precipitate in normal urine is only about 0.64 mm. deep in a straight test tube 25 cm. long with a lumen of 9 mm. The specific gravity, the temperature and the chemical reactions have no bearing on this test.

122. **The Vocal Organs in Castrated Fowls.**—Hosoya's article is accompanied by four double plates showing the loss of male characters in castrated cocks, and the anatomic bases for the resultant inability to crow.

124. **Study of the Saliva.**—Hatta tabulates the findings in the saliva in respect to quantity, ferment content and variations in response to different stimuli. The salivary diastase content did not seem to be directly influenced by the kind of food, and it showed no characteristic fluctuations in any of the diseases investigated. Tannic acid, even in minute amounts, inhibited the diastatic power of the saliva, while sodium nucleinate magnified it tenfold when in a concentration of 1.5 per cent. Below this no effect was apparent, and above 3 per cent. it actually inhibited it. Tincture and extract of valerian promoted diastatic action; this effect was most pronounced at a concentration of 7 per cent. Aqueous extracts may have a more favorable action than the tinctures, especially the extracts of strophanthus, strychnin and ipecac. The enzyme content of saliva secreted during chewing is higher than of saliva spontaneously flowing into the mouth. Still higher diastatic power was found in saliva secreted under the influence of citric acid. He calls attention to the remarkably constant proportion between the amount of saliva secreted and the ferment content, no differences at any time being found in this proportion in specimens of saliva obtained, in health, from the same person at the same time of day and under the same stimuli. The diastatic power kept unmodified for six months in saliva preserved under a layer of toluol, but it was lost in a month in saliva preserved merely by a layer of formaldehyd or phenol. Six of the sugars had no influence below a concentration of 1.5 per cent.; above this they seemed to depress the diastase content.

Russkiy Vrach, Petrograd

Dec. 12, 1915, XIV, No. 50, pp. 1177-1200

126 Purulent Infection of Gunshot Wounds and Its Etiology. A. D. Pavloffsky.

127 *Action of Thyroid Treatment on Uric Acid Secretion. (K voprosu o vliyanii tiriodina na vidielenie mochevoi kisloti mochi.) I. B. Studzinsky and S. T. Kaminsky.

128 Hippocrates. P. V. Modestoff. Commenced in No. 47.

Dec. 19, No. 51, pp. 1201-1208

129 S. P. Botkin, 1832-1889. N. A. Batueff.

Dec. 26, No. 52, pp. 1209-1212

130 *Ascoli's Precipitation Reaction in Diagnosis of Anthrax. M. P. Izabolinsky.

127. **Excretion of Uric Acid During Thyroid Treatment.**—Studzinsky and Kaminsky studied the action of thyroidin on uric acid secretion in seven persons. Two were healthy, one had a gastric ulcer, one suffered from hyperthyroidism, and three from hypothyroidism. It was found that in hypothyreosis, that is, with insufficient thyroid activity, the amount of uric acid in the urine showed a marked increase, not only during the treatment but also during the several days immediately following the suspension of the treatment. The thyroid treatment had no apparent effect on uric acid elimination in the urine in healthy persons, or in those that suffered from slight hyperthyroidism. An inconstant increase in the general amount of urine was noted which increase, however, had no apparent connection with the condition of the thyroid gland. The blood pressure showed no change from the thyroid treatment, unless possibly a slight tendency toward an increase.

130. **Precipitation Test in Diagnosis of Anthrax.**—Izabolinsky immunized rabbits by injecting intravenously, subcutaneously, or into the peritoneum extracts of anthrax bacilli prepared according to the method of Markoff: An agar culture of anthrax bacilli, after eighteen hours of growth at 37 C. was washed out with 50 c.c. of normal salt solution. This fluid having been heated to 50 C. was afterward placed in an apparatus for shaking during twenty-four hours; then filtered through a Berkefeld candle. The filtrate was mixed finally with a little phenol. Of seven rabbits injected only two gave positive results with the anthrax antigen. More favorable were the results from vaccinating rabbits with living cultures of anthrax bacilli. The best results, however, were obtained from a serum prepared according to the formaldehyd technic: A twenty-four hours culture of anthrax bacilli is rinsed with 50 c.c. of distilled water. To this amount 5 c.c. of formaldehyd are added. When the mixture becomes clear, it is rendered neutral by adding sulphuric acid, and then it is placed on a water bath at 56 C. for two hours, or longer, up to four hours, if the starch-iodin paper shows no reaction. The formaldehyd extract was injected into rabbits subcutaneously. The initial doses were 1 or 2 c.c. After five weeks of immunization, a serum was obtained that gave a precipitation ring as soon as it was brought in contact with the anthrax antigen.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

January 15, I, No. 3, pp. 193-276

131 Research on the Perception of Light by Larvae of Flies. (De lichtzin der larven van Calliphora erythrocephala—vleeschvlieg.) H. Weve.

132 Infection From Typhoid Bacilli Carriers. J. P. Bijl.

133 *Injury From Radium in Treatment of Deafness. (Nadeelig gevolg van radium-behandeling bij hardhoorendheid.) H. Burger.

133. **Aggravation from Radium Treatment for Deafness.**—Burger's patient was a man of 32 who had had four years an insidious catarrhal affection of the middle ear. After treatment, including insufflation, the hearing was increased from 15 to 20 cm. for the ticking of a watch on the right side and, for the whispering voice, from 10 to 20 cm. on the left. A later examination after another course of treatment seven years later showed the progress of the deafness: the watch could not be heard at all by the left ear and only when held to the right ear; the whispering voice at 75 cm. from the right ear and only at 1 cm. from the left. He returned six months later with the story that he had taken a course of radiotherapy, 1 mg. of mesothorium having been placed in each ear in turn for one or a few minutes. After five of these exposures in the course of about six weeks, he could no longer hear the whispering voice at all and only loud speaking 10 cm. from his best ear. This aggravation of the condition conflicts with what others have reported from radiotherapy in treatment of deafness, but Burger remarks that with radium and mesothorium treatment we are still groping in the dark.

Ugeskrift for Laeger, Copenhagen

February 5, LXXVIII, No. 5, pp. 123-162

134 *Sterilization of the Unfit. (Racehygiejniske Tvangsforanstaltninger.) C. Geill.

135 Rupture of Kidney From Contusion; Recovery After Tamponing and Draining. (Et Tilfælde af subkutan Nyreruptur behandlet operativt.) O. Keller.

134. **Sterilization of the Unfit.**—Geill discusses the present status of this question and urges that greater attention should be paid to the other side of the problem, namely, the facilitating of the raising of families by the fit, strengthening the strong.